

16 SIXTEEN IS THE MAGIC NUMBER FOR CONGRESSWOMAN BETTY MCCOLLUM

On June 16, 2016, NPT honored Congresswoman Betty McCollum (MN, 4th District) with the 16th annual Bruce F. Vento Public Service Award for her 16 years of outstanding public service to preserve land, water and historic resources for the legacy of America. Throughout her career, her top priorities have been the protection of our environment including clean air and water and the preservation of our national natural treasures. She has consistently voted for and supported parks, public lands, full funding of the Land and Water Conservation Fund, and ocean conservation. Congressman Bruce Vento was McCollum's predecessor in Congress. Previous recipients of the award include Senators Rob Portman (OH), Ron Wyden (OR), Susan Collins (ME), and Representative Mike Simpson (ID), and former Senators Jeff Bingaman (NM) and Mark Udall (CO).



NPT Board Chair Bill Brownell with Congresswoman Betty McCollum (center) and Sue Vento at the Bruce F. Vento Public Service Award event.

88 RECOGNIZING A PARK "JEWELL"

Secretary of the Interior Sally Jewell, was honored on April 11, 2016, with NPT's American Park Experience Award for her numerous accomplishments to enhance the awareness and appreciation of our nation's parks, public lands/waters, and historic and cultural landmarks through her Play, Learn, Serve and Work initiative. She joins past honorees Ken Burns and Dayton Duncan, Secretary Ken Salazar, and Dan Biederman.



Secretary Sally Jewell is joined by local Buddy Bison students for the American Park Experience Award presentation.

9 NPT WELCOMES NEW BOARD LEADERSHIP

Four new board members join the NPT family.



Chad Dayton, *Outdoor Solutions LLC*, serves on NPT's Youth Programs Committee.



Dick Ring, *National Park Service (retired)* and *NPT (retired)*, chairs NPT's Lands & Park Preservation Committee.



Elizabeth Ulmer, *Elizabeth Ulmer Consulting*, serves on NPT's Youth Programs Committee.



Roger Wright, *Total Wine & More (retired)*, serves on NPT's Lands & Park Preservation Committee.

10 RECOGNIZING AN OUTSTANDING BUDDY BISON TEACHER

We all know about the Oscars and the Emmys. The Buddy is our National Teacher Award for Outstanding Environmental Stewardship. In fall 2016, the award was presented in a surprise all school assembly to Krista Gordon at Alderwood Elementary (Bellingham, WA). In 2014, she helped her Alderwood Elementary students enter the Kids to Parks (KTP) Day National School Contest so they could discover and explore Lime Kiln Point State Park. But that was only the beginning. The entire experience, from the preparation of their contest entry to the trip to the park was so rewarding, that Krista was inspired to raise additional funds locally in 2015 for other schools in her district. As a result, 10 of the 14 schools in her district were able to visit Lime Kiln Point State Park, meet with scientists and orca watch! Her students also earned a return trip to the park in spring 2016 through the KTP Day School Contest.



Krista Gordon (center), recipient of *The Buddy*, NPT's National Teacher Award for Outstanding Environmental Stewardship.

PARK PROJECTS

“This is a gift that will live on forever as protected wilderness.”

Superintendent Darla Sidles
Rocky Mountain National Park

Rocky Mountain National Park (CO), photo courtesy of Karen Fisher.

THE GIFT OF WILDERNESS TO ROCKY MOUNTAIN NATIONAL PARK

National Park Trust joined forces with the **Rocky Mountain Conservancy** and **The Wilderness Land Trust** to help make **Rocky Mountain National Park** just a little more wild. As a result, a 12.5 acre private holding located in the Wild Basin area has been added to the park and protected in perpetuity.

The property recently was listed for sale for only the second time in seventy five years. A 2,000 square foot, two story house on the parcel has spectacular views of the Continental Divide where Campers Creek and numerous springs create watering areas for wildlife between the large boulders. With its easy access by road, this private enclave could have been very attractive on the open market.

The last critical piece of funding of \$150,000 was provided to NPT by **The Barrett Family Foundation** who have a special connection to the park. “Living in Boulder we are fortunate to have Rocky Mountain National Park at our doorstep,” stated **Richard Barrett** of The Barrett Family Foundation. “Our youngest daughter had her wedding at the gateway to the park where wild turkeys and deer were part of the ambiance. Wild Basin with the North

St. Vrain River flowing through it is one of those unspoiled, enchanting wilderness areas of the park that was best left unspoiled by the presence of a mountain house.”

Removal of the existing house and access road (which will become a hiking trail) will add 33 acres of land to the Rocky Mountain National Park Wilderness Area. “Expanding the wilderness fulfills the purpose of the Wild Basin area,” says **Reid Haughey**, president of The Wilderness Land Trust.”

Reflecting on the partnership between the three organizations, **Charles Money**, executive director of the Rocky Mountain Conservancy stated, “It took all of our organizations to pull this off, but we are glad this property can now finally be transferred to Rocky Mountain National Park where it belongs.”

Darla Sidles, superintendent of the park said, “We are extremely grateful to the Rocky Mountain Conservancy, The Wilderness Land Trust and National Park Trust in acquiring this private piece of land inside the park. This is a gift that will live on forever as protected wilderness.”



Yosemite National Park (CA)

WAYS YOU CAN SUPPORT OUR LAND PROJECTS:

- Support our land preservation work at your favorite national park. Contact Phil Selleck to learn about the “wish list” of the National Park Service at phil@parktrust.org or call 301.279.7275 ext. 14.
- Become a founding member of the Bison Legacy Society to make a gift with lasting impact on our national parks. See page 15.
- Consider monthly gifts or appreciated stock to support our important work.
- Honor a loved one with a special gift of land to benefit a national park.



Ackerson Meadow's vast 400 acres, photo courtesy of Robb Hirsch.

THE LARGEST EXPANSION TO YOSEMITE IN 70 YEARS

Thanks to a partnership between NPT, **The Trust for Public Land**, **Yosemite Conservancy**, and **American Rivers**, the 400 acre **Ackerson Meadow**, an environmentally important property has been protected in perpetuity as a part of **Yosemite National Park**. The acreage is home to the federally endangered southwestern willow flycatcher, a genetically distinct clan of great gray owls, and more than 100 species of plant, including many impressive meadow wildflowers. Meadows are a critically important habitat and make up just 3 percent of Yosemite; most of San Francisco's water is filtered by Yosemite's meadows including these 400 acres.

Markley Bavinger, project manager with TPL, stated, “We are grateful for the National Park Trust's early support of our work to protect Ackerson Meadow. NPT's efforts

to garner political support and develop a strategy for success were key elements to completing this priority project. The partnership between The Trust for Public Land and National Park Trust has been repeated throughout the country with wonderful results.”

In addition to working with TPL on a strategy for the project's success, NPT also provided the due diligence costs for this land acquisition transaction. The land was conveyed to the National Park Service in September 2016. **Dick Ring**, NPT board member stated, “In 1890 this land was once within the original boundary plans for Yosemite National Park, so it is very rewarding to know that it is now permanently protected by the National Park Service.”

YOUTH PROGRAMS: BUDDY BISON SCHOOLS

Launched in 2009, NPT's Buddy Bison School Program experienced extraordinary growth during the Centennial of the National Park Service.

Thanks to support from the National Park Service Centennial Challenge Funds which were matched dollar for dollar by our donors, the Buddy Bison School Program grew from 30 to 60 Title I schools in 15 states and Washington, D.C. benefiting under served students in preK through 8th grade.

By the Numbers:

50,000 Students provided with park trips since 2009

82 Percent of students qualify for free or reduced-priced lunches

60 Elementary and middle schools

15 States and Washington, D.C.

4th grade Buddy Bison students explore Morristown National Historical Park (NJ) with Ranger Vanessa Smiley.



GOALS OF THE BUDDY BISON SCHOOL PROGRAM:

- Enhance school curriculum using parks as outdoor classrooms.
- Introduce outdoor recreation opportunities to promote health and wellness.
- Cultivate future park stewards.

SUPPORT OUR WORK:

- "Adopt" a school in the Buddy Bison program for one year to provide multiple park trips and classroom resources. Or provide school bus funding for one park trip. One bus transports 50 students plus their teachers.
- Provide a Buddy Bison classroom toolkit for an under served school. Each toolkit is full of resources that teachers can use to incorporate parks into their classroom curricula.
- Make a greater impact to support our school program through monthly gifts or with appreciated stock.
- Honor a loved one on a special occasion by supporting a school.
- Get a Buddy Bison at parktrust.org or at a national park store. You'll have a great traveling companion, while helping us to send an under served student to a park. Proceeds from Buddy Bison sales benefit our youth programs.



NPT board member Elizabeth Ulmer, Ranger Lauren Boross, and Big Buddy Bison award Every Kid in a Park passes to 4th graders at Channel Islands' Lagomarsino Visitor Center. Bus funding for the trip was provided by the National Marine Sanctuary Foundation.

EVERY KID IN A PARK

In 2016, the Obama Administration kicked off the second year of the Every Kid in a Park initiative with the goal of getting every 4th grader to a park or public land. Thanks to generous support from NPT's numerous partners including National Park Service, REI, The North Face, Outdoor Foundation, U.S. Forest Service, National Marine Sanctuary Foundation, National Park Foundation, and Outdoors Alliance for Kids, along with many individual donors, free federal park passes and trips for 4th graders across the country were provided.



Thanks to our partnership with The North Face and OAK, kids from a D.C. school explored Rock Creek Park and received their Every Kid in a Park passes.



Sarah with "Teddy Roosevelt" at Independence National Historical Park (PA).

NPT WELCOMES OUR SECOND BUDDY BISON STUDENT AMBASSADOR

Sarah Hulihan, a 6th grader from Veteran's Memorial Middle School in Vineland, NJ was welcomed as our second **Buddy Bison Student Ambassador**. She joins our inaugural ambassador **Tigran Nahabedian** who attends Ojai Valley School in Ojai, CA. Our ambassadors have an important role to spread the good news to students in their community and across our country about the importance of discovering, exploring, and protecting our nation's parks. Sarah loves history and her favorite parks are the ones that tell our country's story. "Parks and historical sites are so important to me because I love to see and learn about nature and history, and I want other people to know that they are oh so very important too," said Sarah.

Follow Sarah (@jrrangersarah) and Tigran (@jrrangertigran) on Twitter or by reading their blogs in *Buddy Bison's Buzz*, our student e newsletter (visit parktrust.org to sign up for your monthly issue).

YOUTH PROGRAMS: KIDS TO PARKS DAY

In 2016, Kids to Parks Day soared with record participation:

731,000 Participants

1,137 Park Events

420 Mayors and elected officials in all 50 states and Washington, D.C. issued proclamations

74 Schools received park grants through our Kids to Parks Day National School Contest (Grades preK through 12)

23 Governor proclamations

18 National collaborators

1 Senate Resolution passed: co sponsored by Senators Ron Wyden (OR), Orrin Hatch (UT), Cory Booker (NJ), Martin Heinrich (NM), Dianne Feinstein (CA), Lamar Alexander (TN), and Mazie Hirono (HI)

5th graders from Hoover Elementary in Oakland, CA visitu Yosemite using the park grant that they won through the Kids to Parks Day National School Contest.



First launched in 2011, Kids to Parks Day inspires kids across the country to visit their local, state, and national parks and public lands and waters where they can discover the unique science and history of their parks, experience numerous healthy outdoor recreation opportunities, and learn about ways they can protect and preserve our parks.

SATURDAY, MAY 21, 2016

COLLABORATORS

- American Academy of Pediatrics
- American Hiking Society
- American Recreation Coalition
- America's State Parks
- Boy Scouts of America
- Children & Nature Network
- City Parks Alliance
- National Environmental Education Foundation
- National League of Cities
- National Geographic Kids
- National Parks Conservation Association
- National Recreation and Park Association
- National Wildlife Federation
- Outdoor Families Magazine
- Outdoors Alliance for Kids (OAK)
- Sierra Club
- U.S. Army Corps of Engineers
- US Play Coalition

CamelBak provided 2,000 water bottles for recipients of the Kids to Parks Day School Contest including these students from Southeast Kelloggsville School (MI).


DR. SYLVIA EARLE, NATIONAL GEOGRAPHIC EXPLORER-IN-RESIDENCE MAKES A SPECIAL LIVE DIVE

Exploring underwater parks with world renowned oceanographer Dr. Sylvia Earle was the highlight for local Ventura County 4th graders on Kids to Parks Day which also coincided with the National Park Service Centennial BioBlitz. Dr. Earle was joined by 45 students at Anacapa Island in Channel Islands National Park (CA) and an additional 650,000 families watched and interacted with her live dive.

Buddy Bison Student Ambassador and Jr. Ranger Tigran Nahabedian spoke with Dr. Earle after her live dive assisted by Buddy Bison! Here is an excerpt from the fun interview that was transcribed by Chinna Nahabedian, Tigran's mother:

Tigran: "How did you get involved with the National Park Trust?"

Dr. Earle: "Well, they asked me. They told me about Buddy Bison as an ambassador from nature to you, to kids, and I thought that was a great idea. And so today, I took Buddy Bison diving. Well, he did not have a facemask. He somehow was able to magically survive under water without a scuba tank. He didn't have flippers but I held him close and you should see his eyes under water.

He was looking all around, looking at the fish, looking at the kelp, when suddenly a big fish, ha, I mean a fish about twenty times the size of little Buddy Bison came over and I thought he was going to kiss Buddy Bison but he didn't kiss Buddy, he bit him! He took his whole head in his mouth and went chomp and then he realized that bison don't really taste good and so he spit him out, ha, ha! And he left a little hole on the top of Buddy Bison's furry head and a little tiny hole on the bottom, right under his chin.

And I think Buddy Bison's eyes got really wide because he saw what it was like inside the mouth of this big fish. It's called a wrasse, a gorgeous beautiful animal that was probably just as surprised as Buddy Bison when he tried to take a bite and realized, 'This isn't on my menu! This is a furry thing. I don't eat furry things!' And he really did look kind of astonished when he swam away.

He looked back at me and back at Buddy and back at the underwater photographer and the people we were diving with and I'm sure he was wondering, 'What was that?' Ha, ha! Buddy Bison was probably wondering, 'What was that?' Ha, ha, ha! And it all came out just fine.

I love the National Park Trust. You can trust the National Park Trust to protect the land, to protect the ocean, to protect our national heritage. Good for us, good for the future, good for life and earth."

“I love the National Park Trust. You can trust the National Park Trust to protect the land, to protect the ocean, to protect our national heritage. Good for us, good for the future, good for life and earth.”

Dr. Sylvia Earle

Dr. Sylvia Earle joins Tigran Nahabedian, a Buddy Bison Student Ambassador along with 4th graders on Kids to Parks Day at Channel Islands National Park.



Buddy Bison enjoyed a live dive experience with Dr. Earle on Kids to Parks Day.


SUPPORT KIDS TO PARKS DAY:

Make a donation to our Kids to Parks Day National School Contest. Each school will be awarded up to \$1,000 to fund their park trip. Support one school or more! For more information, contact Maryann Kearns at maryann@parktrust.org or call 301.279.7275 ext. 15.

Save the date: Kids to Parks Day 2017 is May 20th!

FINANCIALS

STATEMENT OF ACTIVITIES (Audited) YEAR ENDED JUNE 30, 2016

Changes in Unrestricted Net Assets	Total 2016
REVENUE AND SUPPORT	
Grants and Contributions	1,637,092
In Kind Contributions	204,260
Product Sales and Other Income	54,738
Investment Income	11,623
Release from Restrictions	204,059
Total Unrestricted Revenue Support	2,111,772
EXPENSES	
PROGRAM SERVICES	
Youth Programs	1,420,609
Land and Parks Program	200,708
Total Program Services	1,621,317
SUPPORTING SERVICES	
General and Administrative	202,481
Fundraising	141,170
Total Supporting Services	343,651
Total Expenses	1,964,968
Change in Unrestricted Net Assets before Non-operating Items	146,804
Realized and Unrealized Gain on Investments	4,914
CHANGE IN UNRESTRICTED NET ASSETS	151,718
Changes in Temporarily Restricted Net Assets	
Grants and Contributions	853,800
Release from Restrictions	(114,059)
CHANGE IN TEMPORARILY RESTRICTED NET ASSETS	739,741
Changes in Permanently Restricted Net Assets	
Grants and Contributions	
Release from Restrictions	(90,000)
CHANGE IN PERMANENTLY RESTRICTED NET ASSETS	(90,000)
Change in Net Assets	801,459
NET ASSETS, BEGINNING OF YEAR	4,840,501
NET ASSETS, END OF YEAR	5,641,960

STATEMENT OF FINANCIAL POSITION (Audited)

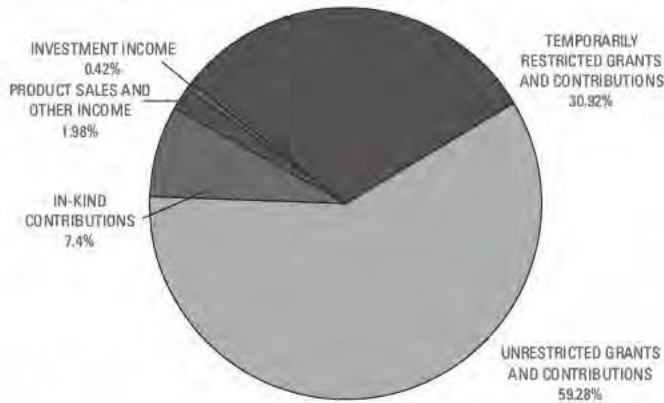
	June 30, 2016
ASSETS	
Current Assets	1,249,824
Investments	322,359
Pledges Receivable, Long term	647,100
Property & Equipment (Net of Depreciation)	304
Real Estate and Related Holdings	3,506,077
TOTAL ASSETS	5,725,664
LIABILITIES	
Current Liabilities	83,704
Long term Liabilities	
TOTAL LIABILITIES	83,704
NET ASSETS	
Unrestricted	3,327,836
Temporarily Restricted	2,124,744
Permanently Restricted	189,380
TOTAL NET ASSETS	5,641,960
TOTAL LIABILITIES & NET ASSETS	5,725,664

Our complete audit and IRS 990 is available on our website: Visit parktrust.org, and click "About Us".

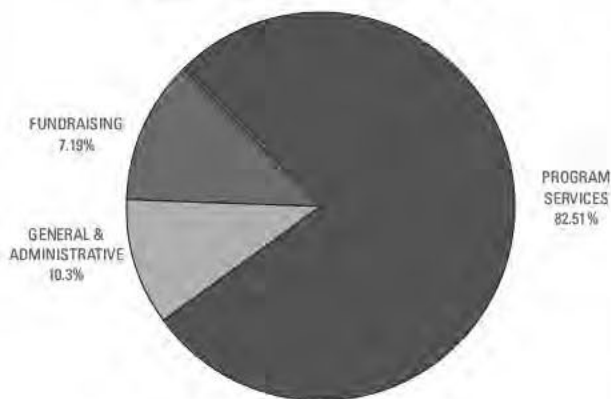
In fiscal year 2016, 82.51% of our resources were invested in our park preservation and youth education programs. NPT has earned a top ranking of A with Charity Watch, has met all 20 criteria of the Better Business Bureau Wise Giving Alliance, and is included in the Catalogue for Philanthropy as "one of the best". NPT is a Gold-Level participant with GuideStar with a demonstrated commitment to transparency. We are good stewards of our parks and your resources!

HOW YOU CAN HELP

2016 Support and Revenue: \$2,761,513



2016 Expenses: \$1,964,968



JOIN THE NPT FAMILY OF SUPPORTERS: Donations to NPT support our nation wide efforts to protect our parks and create park stewards for tomorrow.

- Consider a recurring **monthly gift**. Contact Rebecca Hansell at rebecca@parktrust.org or call 301.279.7275 ext. 12.
- **Workplace Giving:** Federal employees can donate to NPT through the Combined Federal Campaign (CFC). Our CFC number is 12213.
- **Corporate Matching Gifts:** Contact your employer's personnel office to find out how you can double your gift to NPT.
- **In honor/memory:** Celebrate family or friends by making a gift in honor or memory of them. You can opt to have us send a letter to notify them of your gift.
- **Gifts of Stock and Securities:** Appreciated stock and securities allow you to make a gift to NPT and receive increased tax benefits (Charles Schwab, DTC: 0164, Code 40, Account #3801 6879). Visit our website parktrust.org to learn more or contact Maryann Kearns at maryann@parktrust.org or call 301.279.7275 ext. 15.

SPONSORSHIP OPPORTUNITIES: 1) Adopt a school by providing bus funding and/or educational resources for their park trips. 2) Consider underwriting a land acquisition project at your favorite national park. 3) Or sponsor our **Bruce F. Vento Public Service Award** event. See page 14.

JOIN OUR BISON LEGACY SOCIETY: Your legacy will change the face of parks and the lives of people who enjoy them. Become a founding member by including NPT in your estate planning with gifts or proceeds from life insurance, retirement plans, or bank and investment accounts. Contact Maryann Kearns for more details at maryann@parktrust.org or call 301.279.7275 ext. 15. See page 15.

CONNECT: Stay up to date on our work. Sign up for our monthly e newsletters *NPT News* and/or *Buddy Bison's Buzz* (for kids) at parktrust.org or call Rebecca Hansell at 301.279.7275 ext. 12. Share with friends using **#buddybison** or by following us on Facebook, Twitter, and Instagram. [facebook.com/nationalparktrust](https://www.facebook.com/nationalparktrust) [@natparktrust](https://twitter.com/natparktrust) [@nationalparktrust](https://www.instagram.com/nationalparktrust)

NPT is a nonprofit charitable organization 501(c)(3), exempt from taxation (Tax ID #52 1691924). All contributions to NPT are 100% tax deductible.



SPONSOR SPOTLIGHT: SIMMONS HANLY CONROY LLC

In 2000, NPT created the **Bruce F. Vento Public Service Award** to honor outstanding elected officials for their work to protect and preserve our parks, public lands and waters America's heritage. This bi partisan award also pays tribute to the legacy of **Bruce Vento**, a former science teacher, 12 term congressman from Minnesota, and a champion for our nation's parks. Congressman Vento was the chair of the Natural Resources Subcommittee on National Parks, Forest, and Public Lands, and as the committee chair passed more park legislation than any other previous chair.

Over the past 16 years, this annual award event has evolved into a special opportunity for NPT to not only honor an extraordinary public official, but also to celebrate our numerous accomplishments and acknowledge our many partners and supporters for their important role in our mission and work.

For 7 of those years we have been very grateful for the leadership sponsorship from **Simmons Hanly Conroy LLC**, a national law firm based in **Alton, Illinois**. The firm's key

support, totaling \$150,000 to date, allows us to recognize outstanding park stewards and advance our programs. All proceeds from the Vento Award event fund our park projects and youth programs.

"We are proud to support the National Park Trust in memory of Congressman Vento as a way to honor his legacy and help others enjoy his passion for the outdoors," said Simmons Hanly Conroy Shareholder **Perry Browder**.

"Thank you so much to Simmons Hanly Conroy! You not only honor Bruce's legacy and the recipient of the award each year, but your gifts are making a tremendous difference to so many students," said **Sue Vento**, a member of NPT's leadership council. "While it's possible to quantify gifts in dollars and cents, calculating Simmons Hanly Conroy's generosity is best done listening to the stories and seeing the faces of kids who are the beneficiaries of incredible outdoor learning experiences."



2016 Vento honoree Congresswoman Betty McCollum (MN, 4th District) with NPT Board Chair Bill Brownell and Sue Vento (right).



2015 Vento honoree, Senator Rob Portman (OH) dons a Buddy Bison shirt, presented by local Buddy Bison students.



2014 Vento honoree, Senator Ron Wyden (OR) with Perry Browder from Simmons Hanly Conroy (right).

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Darren Zanon

BISON LEGACY SOCIETY BECOME A FOUNDING MEMBER

NPT has established the Bison Legacy Society. This group is comprised of extraordinary people who will provide support for NPT through bequests, charitable remainder trusts, and other life income gifts. Recognition of these generous individuals will occur in various publications, at annual events, and in the Annual Impact Report. To learn more about how you can help or to become a founding member of the Bison Legacy Society, contact Maryann Kearns at maryann@parktrust.org or call 301.279.7275 ext. 15.

BOARD OF TRUSTEES

Bill Brownell <i>Chair</i> Hunton & Williams LLP Washington, D.C.	Evan Anderson Sikich Investment Banking Chicago, IL	Christopher Graham Georgia Pacific LLC Atlanta, GA	Charles Pardoe Prudential Real Estate Investors New York, NY	Elizabeth Ulmer* Elizabeth Ulmer Consulting Malibu, CA
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	Chad Dayton* Outdoor Solutions LLC Saint Paul, MN			Barry Schimel Wellington, FL

*Elected in Fiscal Year 2017

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Grace Lee, Executive Director
Maryann Kearns, Director of Development
Phil Selleck, Park Projects Director
William Schrack, Youth Programs Director
Mike Hoehn, Chief Financial Advisor
Rebecca Hansell, Programs and Office Administrator
Collin Knauss, Youth Programs Manager
Chris Rief, Youth Programs Coordinator
Katie Zimmerman, Education Coordinator

Buddy Bison students at the FDR Memorial, National Mall (D.C.).





Mojave National Preserve (CA).



**NATIONAL
PARK TRUST**

TREASURE FOREVER.

401 E. Jefferson St., Suite 207, Rockville, MD 20850
Tel. 301 279 7275 / E mail: npt@parktrust.org
parktrust.org



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National Park Trust

Our vision: Everyone will have an American Park Experience

Our mission: Preserving Parks Today; Creating Park Stewards for Tomorrow

Preserving Parks Today

National Park Trust (NPT) focuses on the acquisition and preservation of high priority lands and waters adjacent to and within national parks.

Since its founding in 1983, NPT has completed more than 60 land acquisition and environmental restoration projects benefiting 40 national park units and other public lands in 29 states, the Virgin Islands, and Washington, DC totaling more than 40,000 acres.

Funding for these projects comes from individual donors, foundations, corporations, and mitigation settlements.

Project examples

- At **Mojave National Preserve, CA**, Chevron built the Ivanpah Desert Tortoise Research Facility in 2011 on land it acquired as a creative partnership between the company, the National Park Service and National Park Trust. It was part of a settlement to satisfy park land mitigation obligations for impacts by the Mountain Pass rare earth mine on the desert tortoise (*Gopherus agassizii*), a species listed since 1990 as threatened under the Endangered Species Act.
 - Scientists now have a protected, but natural environment where young tortoises can be raised in captivity for several years until their shells are hard enough to resist attacks by predators. They also study the effectiveness of their technique by monitoring the young after they are released to determine survival rates.
 - National Park Trust leased the facility from Chevron, so the park could use it while the transfer of ownership to NPS was taking place. So, when NPS accepted ownership in 2014, they had completed three years of critical research as a result of NPT's involvement. Chevron also donated an additional \$491,000 to NPT which it distributed to NPS over 6-years (2011-2017) for research projects.
- The National Park Service asked NPT if they would acquire, hold title to, and donate two parcels totaling 32.5 acres to **Indiana Dunes National Lakeshore**. In August 2013, NPT began the project with Northern Indiana Public Service Company, a subsidiary of NISOURCE Energy as part of a \$1.5 million EPA consent decree, with the NPT acting as its land mitigation partner. It acquired the land in 2015 and made the transfer to NPS ownership in December 2016. The land purchase connected the visitor center with the rest of the park, and provided an outdoor space for exhibits on methods the park was using in the restoration of natural resources.
- In 1991 H.R. 2369 was introduced in the U.S. House of Representatives; the bill would create a national park from the 10,894-acre Spring Hill/Z-Bar Ranch in the Flint Hills of Kansas. The approximate 300 million acre tallgrass prairie had diminished by 96%, and this park would preserve a biologically correct remnant of that plant community. Representatives of [National Park Trust](#) testified in support of the bill, but there was strong local opposition to transfer of that large amount of land to the federal government.

In 1994, NPT bought the acreage and worked at the local level to advocate for the creation of the Tallgrass Prairie National Preserve under a new plan. A private entity would own the property, but it would be a national park, and the National Park Service would manage it in partnership with the owners. In 1994, Kansas senators Kassebaum and Dole introduced S.2412, which authorized the Tallgrass Prairie National Preserve, but limited NPS to ownership of 180 acres. The bill was passed in 1996, creating the park. The National Park Service managed the preserve with NPT until 2005, when the Nature Conservancy purchased the land and took over.

- NPT worked with Trust for Public Land and National Park Foundation on a \$1.795 million project to acquire 1,494 acres of old growth forest, which will be added to the **Appalachian National Scenic Trail** at Bald Mountain Pond, ME. All parties acquired the necessary funding and TPL took possession of the property on December 20, 2017, with transfer to NPS coming later.

Creating Park Stewards for Tomorrow

NPT began its youth program in 2009. It was responding to data that showed that although minorities made up 37 percent of the U.S. population, they were underrepresented as visitors to national parks, only 22 percent of that population. To get more people to parks, NPT developed programs that give children the ability to experience the outdoors, and learn firsthand the importance of protecting and preserving them.

The **Buddy Bison School Program (BBSP)** and **Buddy Bison Park Experience Program (BB-PEP)**. NPT works to bring elementary and middle school students from Title I schools to national parks and other public lands for education and outdoor recreation using parks as outdoor classrooms. Because, kids need parks and parks need kids.

The **BBSP** is NPT's approach with Title I elementary and middle schools throughout the school year to bring learning outside to national parks and public lands and waters. Buddy Bison teachers are eager to: 1) use parks as outdoor classrooms to enhance/support their core STEM classroom curricula, 2) encourage the health and wellness benefits of outdoor recreation and 3) promote park stewardship and "green" careers. NPT covers all costs to plan and execute their *multiple* park experiences (averaging 3 trips each year) including staff educators, administration of program, bus transportation, classroom toolkits, and education and outdoor recreation fees. More than 80% of our students qualify for free and reduced-priced lunch.

The BBSP engages a school with multiple trips, and the **BB-PEP** provides a *single* park experience trip for all of the students from a specific grade in the school district. BB-PEP complements the Buddy Bison School Program while extending NPT's reach and impact. Both programs build relationships between principals, teachers and their local parks. The model has been very successful during the 2017 school year in NPT's work to involve 4th graders in Washington, D.C.'s public schools with their local national parks.

Kids to Parks Day, annually celebrated the third Saturday in May, has engaged nearly 2,000,000 participants since the program was launched in 2011. In 2017, more than 1,005,000 participants enjoyed 1,735 park events registered at kidstoparks.org; 456 mayors representing all 50 states and the District of Columbia; 22 governors signed proclamations or letters of support and the U.S. Senate passed a Kids to Parks Day resolution. The Kids to Parks Day National School Contest awarded 82 park grants, up to \$1,000 each, to 70 Title 1 schools for 3,764 students in grades Pre-K through 12.

Sponsorship - KTP Day Contest: Sponsorships are available to provide park grants for schools in designated communities. NPT customizes sponsor promotion (social media, NPT e-newsletters, annual report recognition, and cross-recognition at other NPT events) based on gift size.

What's next?

In honor of the Centennial of NPS and in preparation for the next century, NPT is gearing up to:

- Acquire 100 high priority inholdings benefiting more than 40 national park units -- working from an acquisition "wish list" from the National Park Service.
- Grow the Buddy Bison School Program to include and sustain 100 Title 1 schools.

For both goals, NPT seeks to acquire lands and add elementary schools in all 7 geographic NPS regions. Whenever possible, we integrate our land conservation work with our education programs, as exemplified in both the Mojave and Indiana Dunes mitigation projects.

National Park Trust Credentials.

NPT has been vetted by, or has been accepted as a member of, the following:

- Land Trust Alliance - member
- Charity Watch - Given an “A” rating as one of their top-rated charities
- Better Business Bureau Wise Giving Alliance - Accredited by them as having met all 20 criteria for charity accountability
- Greater Washington Catalogue for Philanthropy - Accreditation and inclusion in their 2017 catalog
- Guidestar - Gold level participation based on its commitment to transparency
- OAK Leaf Award: NPT received a 2016 inaugural OAK Leaf Award from the Outdoors Alliance for Kids (OAK). OAK is a 100-member alliance of like-minded organizations dedicated to getting kids to experience the great outdoors.

Strengths and Advantages of the National Park Trust as a third party in land acquisition. NPT:

- Engages in preservation projects that follow organization priorities and align with their management policies
- Works from lists of projects that are “shovel-ready” and selected to follow EPA SEP or mitigation policy, according to the type of project or settlement
- Follows project management standards that ensure transparency, financial best practices, and effective long-term implementation
- Has developed its leadership, expertise, and experience in working with partners across three decades.
- Multiplies the benefits by connecting kids and students with projects and conservation, as, for example, with the Ivanpah Desert Tortoise Research Facility, Mojave National Preserve
- Receives pro-bono guidance and assistance from experienced attorneys that contribute to cost-effective project management.

For more information, contact Grace Lee, NPT executive director (grace@parktrust.org, 301-279-7275)

In fiscal year 2017, 89% of our resources were invested in our park preservation and youth education programs. NPT has earned a top ranking of A from Charity Watch and is a Gold Level participant with GuideStar. We have met all 20 criteria of the Better Business Bureau Wise Giving Alliance and are included in the Catalogue for Philanthropy.

To: Skipwith, Aurelia[aurelia_skipwith@ios.doi.gov]
From: John Scanlon
Sent: 2018-01-21T09:10:16-05:00
Importance: Normal
Subject: Re: DC trip
Received: 2018-01-21T09:10:32-05:00

That would be great. At this stage I arrive 27 Feb and leave 1 March. 28 Feb may be open for dinner. If the agenda gets busy I am also look to coming a day earlier. Thanks, John

From: "Skipwith, Aurelia" <aurelia_skipwith@ios.doi.gov>
Date: Saturday, 20 January 2018 at 22:19
To: John Scanlon <john.scanlon@un.org>
Subject: Re: DC trip

Happy New Year John!

I'd love meet with you...maybe we can grab dinner, if that works for you.

Aurelia Skipwith
Deputy Assistant Secretary
for Fish and Wildlife and Parks

U.S. Department of Interior
1849 C Street, NW, Room 3148
Washington, DC 20240
(202) 208 5837

On Wed, Jan 17, 2018 at 11:02 AM, John Scanlon <john.scanlon@un.org> wrote:
Dear Aurelia

Greetings and Happy New Year 2018!

I will be moderating an event at UN HQ in NYC on 2 March to celebrate World Wildlife Day 2018. I will call past DC for two days on the way and hope we have the opportunity to catchup once again. I will also be in touch with our colleagues at the US FWS to arrange meetings but thought I would also let you know directly.

Kind regards

John

John E. Scanlon
Secretary-General
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
Maison Internationale de l'Environnement
[11-13, chemin des Anemones](#)

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Fax: +41 22 797 34 17
Skype: johnscanloncites
Twitter: @John_CITES
Instagram: John_CITES



To: Aurelia Skipwith[aurelia_skipwith@ios.doi.gov]
From: rich@pacificcommllc.com
Sent: 2018-01-21T17:42:36-05:00
Importance: Normal
Subject: Deschutes HCP Background
Received: 2018-01-21T17:44:28-05:00
[DBBC HCP Update FINAL.docx](#)
[ATT00001.htm](#)

Aurelia - In preparation for our meeting on Wednesday, at 3:00 pm, please see the attached summary of the status of the Deschutes HCP.

2018

DESCHUTES BASIN HABITAT CONSERVATION PLAN UPDATE

OVERVIEW

The Deschutes Basin Board of Control (DBBC), made up of eight irrigation districts in Central Oregon, and the City of Prineville, are working with local, state, and federal agencies to improve fish and wildlife habitat in the Deschutes River and its tributaries by reducing their potential impacts to species protected by the Endangered Species Act.

One of their initiatives is the Deschutes Basin Habitat Conservation Plan (DBHCP). Initiated in 2009, the DBHCP is a multi-species plan designed to improve and enhance fish and wildlife habitat conditions and enable the Districts and City to continue to supply water for irrigation and municipal purposes throughout Central Oregon.

A great deal of credible work has been completed over the last nine years. Early efforts focused on determining which species should be covered by the DBHCP, what activities by the Districts and City might affect those species, and where those effects may occur. The studies identified bull trout, Oregon spotted frog, steelhead trout, sockeye salmon, and spring-run Chinook salmon as the species to be covered by the DBHCP, while other studies examined the effects of District and City activities on habitat. A broad array of surveys and studies focused on a variety of aspects of the Deschutes River, several of its tributaries, and reservoirs in the Deschutes Basin. This work was performed with the input of the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), U.S. Bureau of Reclamation (USBOR), Confederated Tribes of Warm Springs, and 20 other state and federal agencies and non-governmental organizations (NGOs).

WHAT'S THE STATUS?

With the necessary studies complete, the Districts and City passed a major milestone in December 2017, as they presented their proposed conservation measures to address their potential impacts on the covered species to the DBHCP Working Group and stakeholders. In developing these measures, the Districts and City focused on the key criterion for evaluating HCPs, which is whether the plan minimizes and mitigates, to the maximum extent practicable, impacts by the Districts and City on these species. The proposed conservation measures include specific water management measures for Crane Prairie Reservoir, Wickiup Reservoir, Crescent Lake Reservoir, the Deschutes River, Whychus Creek, the Crooked River, Ochoco Creek, and McKay Creek.

Some of the measures outlined in the proposed DBHCP, including a number of measures involving reservoir operations designed to benefit the Oregon spotted frog, are already being implemented, as these measures are contained in a 2016 court-approved settlement agreement between five Districts, USBOR, and two environmental groups. Other measures build off of years-long efforts by the Districts to conserve water and enhance instream flows.

WHAT'S NEXT?

The next step is for USFWS and NMFS to evaluate the proposed DBHCP, and specifically to evaluate the proposed conservation measures, as required by the National Environmental Policy Act (NEPA). The NEPA process was initiated in the summer of 2017 when USFWS led four

public scoping meetings in Madras and Bend. The USFWS is now working to select a NEPA consultant team, which will spend the next year evaluating the proposed DBHCP and preparing a Draft Environmental Impact Statement (EIS). Once completed, the proposed DBHCP and Draft EIS will be released for public comment, likely in late 2018 or early 2019. The goal then will be to have a Final EIS and an approved DBHCP by July 2019.

With the approval of the DBHCP, USFWS and NMFS will issue incidental take permits to the Districts and City, and so long as they adhere to the approved conservation measures in the DBHCP and follow the terms and conditions of the permits, the Districts and City will be authorized to continue their operations covered by the permits. The Districts and City are seeking permits that would provide coverage for 30 years.

In the meantime, the Districts and City are continuing to implement an array of conservation projects in furtherance of the objectives of the DBHCP.

RESOURCES

PowerPoint Presentation: National Environmental Policy Act, Endangered Species Act, and Habitat Conservation Plans, August 2017: <http://bit.ly/2mGbJFq>

PowerPoint Presentation: Deschutes Basin Habitat Conservation Plan NEPA meetings, August 2017: <http://bit.ly/2rjDJE6>

Working Group Presentation: Deschutes Basin Habitat Presentation, December 2017: <http://bit.ly/2DwkSKU>

Deschutes Basin Board of Control: www.dbbcirrigation.com
Mike Britton, President 541-475-3625, mbritton@northunitid.com
Craig Horrell, Vice President, 541-548-6047, chorrell@coid.org

DESCHUTES BASIN HABITAT CONSERVATION PLAN

WHAT ARE SOME OF THE ISSUES?

Some have expressed concern that the proposed conservation measures are not aggressive enough. The Districts have proposed increasing winter flows below Wickiup Dam for the benefit of Oregon spotted frogs, but some stakeholders argue that even higher flows should be provided. The Districts examined the higher flows and are confident that any flow level above what has been proposed would not be practicable. There is simply insufficient water to meet higher winter flow requirements, maintain adequate summer flows, and enable North Unit Irrigation District to continue to meet the needs of the farm and ranch families in the District. It is important to note that federal law does not require the Districts to propose conservation measures that would bankrupt a particular District or otherwise result in one or more Districts being unable to fulfill their obligation to deliver irrigation water.

At the same time, in anticipation that some stakeholders would not be pleased with the proposed winter flows below Wickiup Dam, the Districts also identified higher winter flows as alternatives

to be analyzed as part of the NEPA process. Thus, the NEPA process itself will help confirm how much winter flow below Wickiup Dam is indeed practicable.

Some residents also expressed a desire for the winter flows proposed by the Districts to be provided on a more aggressive schedule. The Districts are confident any schedule more aggressive than what has been proposed is not practicable, given the time and expense necessary to implement the conservation measures that would enable the proposed flows to be met. The Districts also question the ecological need to aggressively change an existing flow regime that has been in place for over 50 years. The NEPA process will examine all of these issues.

Others have asked why the proposed conservation measures do not include requirements for increased on-farm efficiency. The Districts closely examined these measures, and while the Districts are supportive of improving on-farm efficiencies, these requirements would not provide the same conservation benefits as larger canal piping projects. While increased on-farm efficiency can and has reduced irrigation demands, it cannot provide the same level of certainty for instream flows under Oregon state law as piping canals. Moreover, any District resources expended for on-farm efficiencies only reduces funding for the more productive piping projects.

Some residents have raised concern regarding the expense of the conservation projects needed to support the proposed winter flows below Wickiup Dam. The Districts and City have been working with Congress and the State Legislature to secure a sufficient cost-share for all of these projects. Regardless of the specific project, the Districts will provide some or most of the funding for planning, design, construction, operations and maintenance. The NEPA process will also analyze the practicable cost-share for the Districts.

Finally, some have expressed concerns that the proposed conservation measures do not address all of the sources of impacts to the covered species, nor do they ensure recovery of the covered species. Federal law does not require an HCP to address impacts unrelated to the covered activities or ensure the recovery of the species. Rather, the DBHCP represents only a proposal by the Districts and City to address their impacts, and only their impacts, on the covered species. The DBHCP, however, does not prevent others from taking steps to protect or recover fish and wildlife habitat.

There are many views of what should or should not be included as conservation measures in the final DBHCP. The Districts and City believe the DBHCP is a responsible conservation strategy comprised of appropriate measures for improving fish and wildlife habitat conditions. This approach would also enable the Districts and City to continue to meet the societal needs of farm and ranch families, and City residents, throughout Central Oregon. The Districts and City are committed to proceed with the NEPA process as the next phase of the DBHCP effort, and look forward to completing the Deschutes Basin Habitat Conservation Plan in 2019.

To: Aurelia Skipwith[aurelia_skipwith@ios.doi.gov]
From: rich@pacificcommllc.com
Sent: 2018-01-21T17:42:36-05:00
Importance: Normal
Subject: Deschutes HCP Background
Received: 2018-01-21T17:42:47-05:00
DBBC HCP Update FINAL.docx

Aurelia - In preparation for our meeting on Wednesday, at 3:00 pm, please see the attached summary of the status of the Deschutes HCP.

Richard K. Golb
PacificComm LLC
201 NE Park Plaza Drive Ste 269
Vancouver WA 98684
360.397.0248

2018

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To: Skipwith, Aurelia[aurelia_skipwith@ios.doi.gov]
From: John Scanlon
Sent: 2018-01-22T08:59:08-05:00
Importance: Normal
Subject: RE: DC trip
Received: 2018-01-22T08:59:16-05:00

Great and will keep you posted. I am arranging separate meetings with FWS etc and but will not mention this possible dinner engagement, thanks

John E. Scanlon
Secretary-General
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
Maison Internationale de l'Environnement
11-13, chemin des Anemones
1219 Chatelaine-Geneva
Switzerland

Phone: +41 22 917 81 49
Fax: +41 22 797 34 17
Skype: johnscanloncites
Twitter: @John_CITES
Instagram: John_CITES



From: Skipwith, Aurelia [mailto:aurelia_skipwith@ios.doi.gov]
Sent: 22 January 2018 2:53 PM
To: John Scanlon <john.scanlon@un.org>
Subject: Re: DC trip

I'll keep Feb 28th blocked for dinner and just let me know as you figure your schedule out.
Looking forward to it.

Aurelia Skipwith
Deputy Assistant Secretary
for Fish and Wildlife and Parks

U.S. Department of Interior
1849 C Street, NW, Room 3148
Washington, DC 20240
(202) 208-5837

On Sun, Jan 21, 2018 at 9:10 AM, John Scanlon <john.scanlon@un.org> wrote:

That would be great. At this stage I arrive 27 Feb and leave 1 March. 28 Feb may be open for dinner. If the agenda gets busy I am also look to coming a day earlier. Thanks, John

From: "Skipwith, Aurelia" <aurelia_skipwith@ios.doi.gov>
Date: Saturday, 20 January 2018 at 22:19
To: John Scanlon <john.scanlon@un.org>
Subject: Re: DC trip

Happy New Year John!

I'd love meet with you...maybe we can grab dinner, if that works for you.

Aurelia Skipwith
Deputy Assistant Secretary
for Fish and Wildlife and Parks

U.S. Department of Interior
1849 C Street, NW, Room 3148
Washington, DC 20240
(202) 208-5837

On Wed, Jan 17, 2018 at 11:02 AM, John Scanlon <john.scanlon@un.org> wrote:
Dear Aurelia

Greetings and Happy New Year 2018!

I will be moderating an event at UN HQ in NYC on 2 March to celebrate World Wildlife Day 2018. I will call past DC for two days on the way and hope we have the opportunity to catchup once again. I will also be in touch with our colleagues at the US FWS to arrange meetings but thought I would also let you know directly.

Kind regards

John

John E. Scanlon
Secretary-General
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
Maison Internationale de l'Environnement
11-13, chemin des Anemones
1219 Chatelaine-Geneva
Switzerland

Phone: +41 22 917 81 49
Fax: +41 22 797 34 17
Skype: johnscanloncites
Twitter: @John_CITES

Instagram: John_CITES



To: Aurelia Skipwith[aurelia_skipwith@ios.doi.gov]
From: rich@pacificcommllc.com
Sent: 2018-01-22T16:06:49-05:00
Importance: Normal
Subject: Deschutes Basin HCP
Received: 2018-01-22T16:52:19-05:00
DBBC Habitat Conservation Plan Update January 2018.pdf

Aurelia - Please see attached. This is a DBBC document presenting the status and questions regarding the pending Deschutes Basin HCP. You're welcome to share it with others as appropriate. See you Wednesday.

Richard K. Golb
PacificComm LLC
201 NE Park Plaza Drive Ste 269
Vancouver WA 98684
360.397.0248



Deschutes Basin Board of Control



Connecting Central Oregon's Water, Land & Environment



2018 DESCHUTES BASIN HABITAT CONSERVATION PLAN UPDATE

OVERVIEW

The Deschutes Basin Board of Control (DBBC), made up of eight irrigation districts in Central Oregon, and the City of Prineville, are working with local, state, and federal agencies to improve fish and wildlife habitat in the Deschutes River and its tributaries by reducing their potential impacts to species protected by the Endangered Species Act.

One of their initiatives is the Deschutes Basin Habitat Conservation Plan (DBHCP). Initiated in 2009, the DBHCP is a multi-species plan designed to improve and enhance fish and wildlife habitat conditions and enable the Districts and City to continue to supply water for irrigation and municipal purposes throughout Central Oregon.

A great deal of credible work has been completed over the last nine years. Early efforts focused on determining which species should be covered by the DBHCP, what activities by the Districts and City might affect those species, and where those effects may occur. The studies identified bull trout, Oregon spotted frog, steelhead trout, sockeye salmon, and spring-run Chinook salmon as the species to be covered by the DBHCP, while other studies examined the effects of District and City activities on habitat. A broad array of surveys and studies focused on a variety of aspects of the Deschutes River, several of its tributaries, and reservoirs in the Deschutes Basin. This work was performed with the input of the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), U.S. Bureau of Reclamation (USBOR), Confederated Tribes of Warm Springs, and 20 other state and federal agencies and non-governmental organizations (NGOs).

WHAT'S THE STATUS?

With the necessary studies complete, the Districts and City passed a major milestone in December 2017, as they presented their proposed conservation measures—to address their potential impacts on the covered species—to the DBHCP Working Group and stakeholders. In developing these measures, the Districts and City focused on the key criterion for evaluating HCPs, which is whether the plan minimizes and mitigates, to the maximum extent practicable, impacts by the Districts and City on these species. The proposed conservation measures include specific water management measures for Crane Prairie Reservoir, Wickiup Reservoir, Crescent Lake Reservoir, the Deschutes River, Whychus Creek, the Crooked River, Ochoco Creek, and McKay Creek.

Some of the measures outlined in the proposed DBHCP, including a number of measures involving reservoir operations designed to benefit the Oregon spotted frog, are already being implemented, as these measures are contained in a 2016 court-approved settlement agreement between five Districts, USBOR, and two environmental groups. Other measures build off of years-long efforts by the Districts to conserve water and enhance instream flows.

WHAT'S NEXT?

The next step is for USFWS and NMFS to evaluate the proposed DBHCP, and specifically to evaluate the proposed conservation measures, as required by the National Environmental Policy Act (NEPA). The NEPA process was initiated in the summer of 2017 when USFWS led four public scoping meetings in Madras and Bend. The USFWS is now working to select a NEPA consultant team, which will spend the next year evaluating the proposed DBHCP and preparing a Draft Environmental Impact Statement (EIS). Once completed, the proposed DBHCP and Draft EIS will be released for public comment, likely in late 2018 or early 2019. The goal then will be to have a Final EIS and an approved DBHCP by July 2019.

With the approval of the DBHCP, USFWS and NMFS will issue incidental take permits to the Districts and City, and so long as they adhere to the approved conservation measures in the DBHCP and follow the terms and conditions of the permits, the Districts and City will be authorized to continue their operations covered by the permits. The Districts and City are seeking permits that would provide coverage for 30 years.

In the meantime, the Districts and City are continuing to implement an array of conservation projects in furtherance of the objectives of the DBHCP.

RESOURCES

PowerPoint Presentation: National Environmental Policy Act, Endangered Species Act, and Habitat Conservation Plans, August 2017: <http://bit.ly/2mGbJFq>

PowerPoint Presentation: Deschutes Basin Habitat Conservation Plan NEPA meetings, August 2017: <http://bit.ly/2rjDJE6>

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Deschutes Basin Board of Control: www.dbbcirrigation.com
Mike Britton, President 541-475-3625, mbritton@northunitid.com
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DESCHUTES BASIN HABITAT CONSERVATION PLAN

WHAT ARE SOME OF THE ISSUES?

Some have expressed concern that the proposed conservation measures are not aggressive enough. The Districts have proposed increasing winter flows below Wickiup Dam for the benefit of Oregon spotted frogs, but some stakeholders argue that even higher flows should be provided. The Districts examined the higher flows and are confident that any flow level above what has been proposed would not be practicable. There is simply insufficient water to meet higher winter flow requirements, maintain adequate summer flows, and enable North Unit Irrigation District to continue to meet the needs of the farm and ranch families in the District. It is important to note that federal law does not require the Districts to propose conservation measures that would bankrupt a particular District or otherwise result in one or more Districts being unable to fulfill their obligation to deliver irrigation water.

At the same time, in anticipation that some stakeholders would not be pleased with the proposed winter flows below Wickiup Dam, the Districts also identified higher winter flows as alternatives to be analyzed as part of the NEPA process. Thus, the NEPA process itself will help confirm how much winter flow below Wickiup Dam is indeed practicable.

Some residents also expressed a desire for the winter flows proposed by the Districts to be provided on a more aggressive schedule. The Districts are confident any schedule more aggressive than what has been proposed is not practicable, given the time and expense necessary to implement the conservation measures that would enable the proposed flows to be met. The Districts also question the ecological need to aggressively change an existing flow regime that has been in place for over 50 years. The NEPA process will examine all of these issues.

Others have asked why the proposed conservation measures do not include requirements for increased on-farm efficiency. The Districts closely examined these measures, and while the Districts are supportive of improving on-farm efficiencies, these requirements would not provide the same conservation benefits as larger canal piping projects. While increased on-farm efficiency can and has reduced irrigation demands, it cannot provide the same level of certainty for instream flows under Oregon state law as piping canals. Moreover, any District resources expended for on-farm efficiencies only reduces funding for the more productive piping projects.

Some residents have raised concern regarding the expense of the conservation projects needed to support the proposed winter flows below Wickiup Dam. The Districts and City have been working with Congress and the State Legislature to secure a sufficient cost-share for all of these projects. Regardless of the specific project, the Districts will provide some or most of the funding for planning, design, construction, operations and maintenance. The NEPA process will also analyze the practicable cost-share for the Districts.

Finally, some have expressed concerns that the proposed conservation measures do not address all of the sources of impacts to the covered species, nor do they ensure recovery of the covered species. Federal law does not require an HCP to address impacts unrelated to the covered activities or ensure the recovery of the species. Rather, the DBHCP represents only a proposal by the Districts and City to address their impacts, and only their impacts, on the covered species. The DBHCP, however, does not prevent others from taking steps to protect or recover fish and wildlife habitat.

There are many views of what should or should not be included as conservation measures in the final DBHCP. The Districts and City believe the DBHCP is a responsible conservation strategy comprised of appropriate measures for improving fish and wildlife habitat conditions. This approach would also enable the Districts and City to continue to meet the societal needs of farm and ranch families, and City residents, throughout Central Oregon. The Districts and City are committed to proceed with the NEPA process as the next phase of the DBHCP effort, and look forward to completing the Deschutes Basin Habitat Conservation Plan in 2019.



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Deschutes Basin Board of Control



Connecting Central Oregon's Water, Land & Environment



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To: Skipwith, Aurelia[aurelia_skipwith@ios.doi.gov]
From: John Scanlon
Sent: 2018-01-23T09:21:49-05:00
Importance: Normal
Subject: RE: DC trip
Received: 2018-01-23T09:22:58-05:00

Aurelia, all is locked in now for the 28th for dinner. I will be at the Lombardy Hotel on Pennsylvania Ave. Happy to rendezvous wherever best suits. My mobile just in case is (b)(6). Looking forward to catching up, Best, John

John E. Scanlon
Secretary-General
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
Maison Internationale de l'Environnement
11-13, chemin des Anemones
1219 Chatelaine-Geneva
Switzerland

Phone: +41 22 917 81 49
Fax: +41 22 797 34 17
Skype: johnscanloncites
Twitter: @John_CITES
Instagram: John_CITES



From: Skipwith, Aurelia [mailto:aurelia_skipwith@ios.doi.gov]
Sent: 22 January 2018 2:53 PM
To: John Scanlon <john.scanlon@un.org>
Subject: Re: DC trip

I'll keep Feb 28th blocked for dinner and just let me know as you figure your schedule out. Looking forward to it.

Aurelia Skipwith
Deputy Assistant Secretary
for Fish and Wildlife and Parks

U.S. Department of Interior
1849 C Street, NW, Room 3148
Washington, DC 20240
(202) 208-5837

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Kind regards

John

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Skype: johnscanloncites
Twitter: @John_CITES

Instagram: John_CITES



To: Aurelia_skipwith@ios.doi.gov[Aurelia_skipwith@ios.doi.gov]
From: Geoff Pampush
Sent: 2018-01-23T14:44:07-05:00
Importance: Normal
Subject: The Peregrine Fund -Pleasure to meet you
Received: 2018-01-23T14:51:59-05:00

Aurelia

It was a pleasure to meet you and introduce you to our work to recover endangered species. We would like to get you in the field to show you some of our work. I will send you an invitation next week to several of our field projects with hopes you can join us for at least one of them.

Regards,

Geoff Pampush

VP for Global Partnerships
The Peregrine Fund
406.388.7717

To: aurelia_skipwith@ios.doi.gov[aurelia_skipwith@ios.doi.gov]
Cc: Mary Ellen Sprenkel[msprenkel@corpsnetwork.org]
From: Tyler Wilson
Sent: 2018-01-25T10:19:58-05:00
Importance: Normal
Subject: RE: 21CSC February 12th event
Received: 2018-01-25T10:22:17-05:00
[TCN Conference P21CSC Annotated Agenda 2-12-2018.docx](#)
[Attachment A - Priorities for Financial Assistance v2 \(1\).docx](#)

Good to talk to you this morning. I will send information on the \$50k agreement review in a separate message. Attached is an annotated agenda for your review. Please let me know if you have any questions and the format the Secretary would prefer (speech, discussion with moderator, Q&A availability).

Included below are the talking points we have shared with George and with Marshall, and attached is a highlighted document of DOI priorities indicating the types of projects that Corps work on and how. I would ask that you not share the attached highlight document widely as it's not really polished, but was intended to provide some examples of how our work fits within DOI's priorities:

Secretary Zinke Keynote TP's:

- ☐ Highlight visit to Corps in the past:
 - Great Smoky Mountains National Park (American Conservation Experience working to re-open the popular Rainbow Trail)
 - Wilson's Creek National Battlefield (Conservation Corps of Minnesota & Iowa helping to preserve and restore the battlefield)
- ☐ Secretary's conservation philosophy and how it fits well with the ethos of Corps President Teddy Roosevelt and the "strenuous life," for example
 - Highlight the importance of recreation, access, infrastructure, productive fish and wildlife habitat, wildfire remediation, conserving public lands
- ☐ Announce the Secretary's commitment to doubling Corps work how Corps are part of the solution, and a new campaign can be developed to help address DOI's priorities and expand opportunities for service for young adults and veterans to serve in Corps and become the next generation of outdoor stewards, recreationists, entrepreneurs, and sportsmen and women
- ☐ Identify priorities for the Department of Interior and how Corps fit (also see attachment for alignment with recent priorities list and examples):
 - Addressing the backlog and proposed strategies and priorities
 - Recreation projects and infrastructure
 - Access (habitat improvements and multi-use trails, campsites etc.)
 - Re-forestation and wildfire remediation
 - Sportsmen group partnerships
 - Veterans and Military Families Initiative
 - Field staff who are generalists and adding capacity to the field
- ☐ Announce next steps to double the amount of Corps work and develop the next generation of recreationists, outdoor stewards, and sportsmen and women:

1. Corps project agreements will receive priority and expedited consideration through the \$50,000 financial agreement review process
 2. Designate a Corps liaison at DOI
 3. Develop a new name and campaign in coordination with the Corps Network
 4. Communications and External Affairs coordination (internal to DOI and external) to promote this new campaign to double Corps' work
 5. Identify specific projects for doubling within each bureau aligned with DOI Priorities, and develop field and headquarters-level infrastructure and data to support the plan
 6. Expand veteran and military family engagement and partnerships for recruiting
 7. Identify new career pathways and apprenticeships with DOI and with private employers
 8. Develop new fundraising partnerships and a spokesperson to promote the campaign and work
- ☐ Provide broad direction for DOI and reorganization and how Corps can stay engaged.
 - ☐ Commit to visiting another Corps in the field and continuing to work together.

Thanks, Tyler Wilson.

The Corps Network

Begin forwarded message:

From: "Skipwith, Aurelia" <aurelia_skipwith@ios.doi.gov>
Date: January 24, 2018 at 5:19:04 PM EST
To: Mary Ellen Sprenkel <msprenkel@corpsnetwork.org>
Subject: Re: 21CSC February 12th event

Hi Mary,
I can call tomorrow at 9am.

Aurelia Skipwith
Deputy Assistant Secretary
for Fish and Wildlife and Parks

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1849 C Street, NW, Room 3148
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(202) 208-5837

On Wed, Jan 24, 2018 at 5:03 PM, Mary Ellen Sprenkel
<msprenkel@corpsnetwork.org> wrote:
Hi Aurelia,

I have to head out in a minute to pick up my kids and get them to soccer practice and church youth group. After that, we have a busy night with homework... ??
Can we try to connect tomorrow?

Thanks!

Mary Ellen

From: Skipwith, Aurelia [mailto:aurelia_skipwith@ios.doi.gov]
Sent: Wednesday, January 24, 2018 4:31 PM
To: Mary Ellen Sprenkel <msprenkel@corpsnetwork.org>
Subject: 21CSC February 12th event

Happy New Year, Mary!

I hope your year is off to a great start.

I preparing the Secretary's schedule for the February 12th event and I have some questions. Are you available today for a call? Thank you.

Aurelia Skipwith
Deputy Assistant Secretary
for Fish and Wildlife and Parks

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THE PARTNERSHIP FOR THE 21CSC

The Corps Network National Conference

Partnership for the 21st Century Conservation Service Corps *Plenary Session – Grand Ballroom*

3:00 – 5:00 pm, February 12, 2018

The Fairmont Hotel: 2401 M St NW, Washington, DC 20037

Annotated Agenda

2:45pm: Secretary of the Interior Arrives

- Tyler Wilson (Director of Government Relations) will meet in the lobby of hotel
 - Cell: 202-580-5590
 - Email: twilson@corpsnetwork.org
- Conference, Green Room, and Grand Ballroom are in the basement of the hotel

2:50pm: Secretary of the Interior Green Room (Decatur)

- Speakers receive their lavalier microphones (if applicable)
- Tyler will walk the Secretary and staff in to ballroom to reserved table at front of room

3:00pm: Opening & Introduction of Sec. Zinke

- Mary Ellen Sprenkel, President & CEO, the Corps Network; Co-Chair, Partnership for the 21st Century Conservation Service Corps

3:05pm: Keynote Address by Secretary of the Interior Ryan Zinke

- Podium and microphone or seated w/lavalier TBD

3:20pm: 21CSC Champions Recognition

- Betsy Wooster, (retired) National Youth Program Lead, Bureau of Land Management
- Ben Baldwin, Youth and Volunteer Programs Manager, Intermountain Region, National Park Service

The Partnership for the 21CSC supports the development and implementation of the 21CSC to reach its goal of engaging 100,000 young people and veterans per year in conservation service.

www.21CSC.org



THE PARTNERSHIP FOR THE 21CSC

- Kelly Pearson, Wilderness Technician and Volunteer Coordinator, Shawnee National Forest, U.S. Forest Service
- Lonnie Pilkington, Natural Resource Manager, Glen Canyon National Recreation Area, National Park Service
- Jen Murphy, Operations Manager, Disaster Services Unit, Corporation for National and Community Service

3:30pm: 21CSC Corpsmember of the Year Speech

- Earl Bowman, Delaware State Parks Veterans Conservation Corps

3:40pm: 21CSC Strategy Roll-Out Presentation

- Focus Areas & Messaging
- Communications Plan
- Education & Outreach Plan
- P21CSC Operation

3:50pm: Video: Corporation for National and Community Service & Conservation Corps

4:00pm: Partner Recognition and Commitment Highlights

- Partner Recognition
- New Commitments
- Accomplishments

4:15pm: Video: 21CSC Project of the Year Recognition

- California Conservation Corps - Save the Sierra, Tree Mortality Program

4:20pm: Panel Discussion:

- Dan Jiron, Acting Deputy Under Secretary for Natural Resources and the Environment, US Department of Agriculture – Confirmed
- Ben Cassidy, Senior Deputy Director for External and Intergovernmental Affairs, US Department of the Interior – Confirmed
- Marshall Critchfield, Senior Advisor, US Department of the Interior – Confirmed
- Kristi Boswell, Senior Advisor, US Department of Agriculture – Invited

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- Rick May, Advisor, US Department of the Interior – Invited

TBD: Congressional Speech

- Rep. Seth Moulton – Invited
- Sen. John McCain – Invited

**Attachment A:
Priorities for Financial Assistance**

The Secretary of the Interior's Top Ten Priorities

1. ***Creating a conservation stewardship legacy second only to Teddy Roosevelt***
 - a. Utilize science to identify best practices to manage land and water resources and adapt to changes in the environment;
 - i) Corps help support DOI's research needs with high-quality interns and individual placements.
 - b. Examine land use planning processes and land use designations that govern public use and access;
 - c. Revise and streamline the environmental and regulatory review process while maintaining environmental standards.
 - d. Review DOI water storage, transportation, and distribution systems to identify opportunities to resolve conflicts and expand capacity;
 - e. Foster relationships with conservation organizations advocating for balanced stewardship and use of public lands;
 - i) Corps support the DOI we have always worked on multi-use projects and practiced balanced stewardship
 - f. Identify and implement initiatives to expand access to DOI lands for hunting and fishing;
 - i) Corps have been involved with the Outdoor Recreation Industry Roundtable to identify ways to expand recreation access, and improve infrastructure. Much of the work Corps do is around expand access to recreation opportunities and hunting and fishing opportunities through access and improved habitat.
 - g. Shift the balance towards providing greater public access to public lands over restrictions to access.
 - i) Corps' work on maintenance and trails for example helps to expand access, and keep access in a cost-effective way.
2. ***Utilizing our natural resources***
 - a. Ensure American Energy is available to meet our security and economic needs;
 - b. Ensure access to mineral resources, especially the critical and rare earth minerals needed for scientific, technological, or military applications;
 - c. Refocus timber programs to embrace the entire 'healthy forests' lifecycle;
 - d. Manage competition for grazing resources.
3. ***Restoring trust with local communities***
 - a. Be a better neighbor with those closest to our resources by improving dialogue and relationships with persons and entities bordering our lands;
 - o Corps are an ideal partner to help DOI accomplish this. We are not bound by land boundaries, and can work with multiple levels of government and ownership and complete needed projects across landscapes and watersheds.

- b. Expand the lines of communication with Governors, state natural resource offices, Fish and Wildlife offices, water authorities, county commissioners, Tribes, and local communities.

4. *Ensuring sovereignty means something*

- a. Support tribal self-determination, self-governance, and sovereignty;
 - o Programs like Ancestral Lands Corps help native youth learn self-determination and in-demand skills that will lead them to careers and improve their opportunity for employment and education.
- b. Solidify mutual interests between the U.S. and the freely associated states and territories.

5. *Generating additional revenues to support DOI & National interests*

- a. Ensure that the public receives the full market value for the natural resources produced on federal lands;
- b. Ensure that fees or costs levied for DOI services are reasonable and targeted to achieve cost recovery;
- c. Consider the impact of DOI decisions on economic development and job creation.
 - o Partnerships with DOI and Corps directly supports economic development and job creation in rural communities. Corps not only provide jobs to young people and veterans, but we also purchase trucks, boots, chainsaws, and stay in hotels and buy food in gateway and rural communities. Our Corpsmembers go on to be outdoor stewards, recreationists, and sportsmen and women therefore continuing to contribute to the outdoor and rural economy.

6. *Protecting our people and the border*

- a. Actively support efforts to secure our southern border;
- b. Ensure DOI law enforcement staffing addresses public safety risks anticipated on DOI land.
- c. Promote a “public service” demeanor within our law enforcement community.

7. *Striking a regulatory balance*

- a. Reduce the administrative and regulatory burden imposed on U.S. industry and the public;
- b. Ensure that Endangered Species Act decisions are based on strong science and thorough analysis.

8. *Modernizing our infrastructure*

- a. Support the White House Public/Private Partnership Initiative to modernize U.S. infrastructure;
 - 1. Corps help to accomplish infrastructure projects including with US DOT and State DOT's, not to mention public lands infrastructure.
- b. Remove impediments to infrastructure development and facilitate private sector efforts to construct infrastructure projects serving American needs;
- c. Prioritize DOI infrastructure needs to highlight:
 - 1. Construction of infrastructure;

- i. Corps help to accomplish infrastructure projects including with US DOT and State DOT's, not to mention public lands infrastructure.
- 2. Cyclical maintenance;
 - i. Corps address a significant amount of cyclic maintenance in a cost-effective way with DOI already.
- 3. Deferred maintenance.
 - i. Corps address a significant amount of deferred maintenance in a cost-effective way with DOI already

9. ***Reorganizing for the next 100 years***

- a. Improve alignment and integration of the DOI organizational structure;
- b. Redistribute organizational resources (people and funding) to enhance mission achievement and improved public service;
 - o Corpsmembers are the ultimate utility players and generalists when working in partnership with DOI, and if they're able to be hired for field positions. In addition, our partnerships enable field staff to focus on other critical tasks like recreation access, resource conservation and visitor experience.
- c. Improve organizational alignment with Executive Branch counterparts with major land management assets or influence.

10. ***Achieving our goals and leading our team forward***

- a. Senior executives are expected to provide leadership in achieving goals of the President and the Secretary;
- b. The Management Team is expected to:
 - 1. Ensure cost-effective operations and quality service to the public;
 - 2. Facilitate organizational cooperation and conflict resolution;
 - 3. Ensure the workplace environment is conducive to employee productivity and safety;
 - 4. Hold individuals accountable for actions that violate DOI policies and requirements.

Other Key Initiatives

- 1. Employment of veterans
 - a. Veterans Corps can be a critical component of DOI's veterans initiative, and in helping veterans transition to civilian careers like wildland firefighting or historic preservation.
- 2. Supporting DOI infrastructure needs
 - a. Corps help to accomplish infrastructure projects including with US DOT and State DOT's, not to mention public lands infrastructure. Corps address a significant amount of maintenance in a cost-effective way with DOI already.
- 3. Creating jobs in the American economy
 - a. Partnerships with DOI and Corps directly supports economic development and job creation in rural communities. Corps not only provide jobs to young people and veterans, but we also purchase trucks, boots, chainsaws, and stay in hotels and buy food in gateway and rural communities. Our Corpsmembers go on to be

outdoor stewards, recreationists, and sportsmen and women therefore continuing to contribute to the outdoor and rural economy

4. Access to outdoor recreation opportunities

- a. Much of the work Corps do is around expanding access to recreation opportunities and hunting and fishing opportunities through access and improved habitat. Multi-use trail development is another recreation-related angle, in addition to campsite and infrastructure maintenance and development.

To: Boggess, Ed (DNR)[ed.boggess@state.mn.us]; Bill Moritz[bmoritz@wildlifemgt.org]; aurelia_skipwith@ios.doi.gov[aurelia_skipwith@ios.doi.gov]; dave_walker@fws.gov[dave_walker@fws.gov]; gregory_sheehan@fws.gov[gregory_sheehan@fws.gov]; tom_melius@fws.gov[tom_melius@fws.gov]; MoritzW@michigan.gov[MoritzW@michigan.gov]; Claire.Beck@dnr.state.oh.us[Claire.Beck@dnr.state.oh.us]; brian.klippenstein@osec.usda.gov[brian.klippenstein@osec.usda.gov]
From: Ryan Yates
Sent: 2018-01-26T10:29:19-05:00
Importance: Normal
Subject: RE: Farm Bureau MAFWA letter
Received: 2018-01-26T10:29:57-05:00
[FB follow up to MAFWA 1 25 18.pdf](#)

All

Please see the attached letter from Farm Bureau regarding withdrawal from participation in the MAFWA Mid-America Monarch Conservation Strategy. Following lengthy discussions, we have concerns about the Agriculture/Private Working Lands Technical Work Group and its recommendations concerning changes to farm program policy in the Farm Bill.

We thank you for your time and the offer of participation. We hope our organizations can continue to inform each other as we work to promote monarch conservation.

Please let me know if you have any questions. Thank you.

RYAN R. YATES | *Director of Congressional Relations*
American Farm Bureau Federation®
600 Maryland Ave, SW Suite 1000W | Washington, DC 20024
Office 202.406.3664 | Mobile 202.641.1416

From: Boggess, Ed (DNR)
Sent: Monday, October 30, 2017 4:27 PM
To: 'Ryan Yates' <ryany@fb.org>
Cc: Aurelia Skipwith <aurelia_skipwith@ios.doi.gov>; dave_walker@fws.gov; gregory_sheehan@fws.gov; 'Melius, Tom' <tom_melius@fws.gov>; MoritzW@michigan.gov; Claire.Beck@dnr.state.oh.us
Subject: RE: Farm Bureau MAFWA letter

Mr. Yates,
Please see attached response to your letter of October 23, 2017, sent on behalf of the Mid-America Monarch Conservation Strategy Board of Directors and chair Bill Moritz.

Please share as appropriate and we look forward to your response.

Edward K. Boggess, CWB®
MAFWA Monarch Conservation Liaison

email: ed.boggess@state.mn.us
phone: 651-308-6283

From: Ryan Yates [<mailto:ryany@fb.org>]
Sent: Monday, October 23, 2017 9:16 AM
To: MoritzW@michigan.gov; Boggess, Ed (DNR) <ed.boggess@state.mn.us>;
Claire.Beck@dnr.state.oh.us
Cc: Aurelia Skipwith <aurelia_skipwith@ios.doi.gov>; dave_walker@fws.gov;
gregory_sheehan@fws.gov
Subject: Farm Bureau MAFWA letter

Good Morning -

Please see the attached letter written on behalf of the American Farm Bureau Federation and the state Farm Bureaus of Illinois, Indiana, Iowa, Kansas, Michigan, Nebraska, Oklahoma, and Texas outlining concerns regarding the Midwest Association of Fish and Wildlife Agencies (MAFWA) effort to develop the Mid-America Monarch Conservation Strategy (Strategy).

I look forward to working with you to rectify these important concerns. Thank you.

RYAN R. YATES | *Director of Congressional Relations*
American Farm Bureau Federation ®
600 Maryland Ave, SW Suite 1000W | Washington, DC 20024
Office [202.406.3664](tel:202.406.3664) | Mobile [202.641.1416](tel:202.641.1416)

January 25, 2018

Bill Moritz, Chairman
Board of Directors
Midwest Association of Fish and Wildlife Agencies
Mid-America Monarch Conservation Strategy

Email letter to: moritzw@michigan.gov

Cc: Ed Boggess (ed.boggess@state.mn.us), Claire Beck (Claire.Beck@dnr.state.oh.us)

Re: Farm Bureau Participation in the MAFWA Effort to Develop the Mid-America Monarch Conservation Strategy

Dear MAFWA Board of Directors,

This correspondence is written on behalf of the American Farm Bureau Federation and the 1,590,058 members of the state Farm Bureaus of Illinois, Indiana, Iowa, Kansas, Nebraska, Oklahoma, and Texas in follow up to the December 15, 2017 conference call we had with Mr. Boggess and Mr. Moritz regarding the Midwest Association of Fish and Wildlife Agencies (MAFWA) effort to develop the Mid-America Monarch Conservation Strategy (Strategy).

To begin, we sincerely appreciate the time Mr. Boggess and Mr. Moritz spent with us on the conference call. As we understand it, 17 state fish and wildlife agency directors are working within MAFWA to “knit together individual state strategies” under a quick deadline set forth by a National Fish and Wildlife Foundation grant. We appreciate Mr. Boggess’s and Mr. Moritz’s comments regarding their acknowledgement that private land, mostly agricultural land in this region, is important for protecting the monarch butterfly. We also welcomed your statement that avoiding the Endangered Species Act (ESA) listing of the same is the goal of the MAFWA effort.

In addition to the Board of Directors, MAFWA has added “ex-officio members” to the Strategy effort, including the US Fish and Wildlife Service (FWS), the US Department of Agriculture-Natural Resources Conservation Service (NRCS), Pheasants Forever, National Wildlife Federation, and Monarch Joint Venture. MAFWA has extended an offer for an ex-officio member position to the Keystone Monarch Collaborative and also now to Farm Bureau. As we understand it, the ex-officio member positions do not come with voting rights.

In addition to the Board of Directors and Ex-officio member positions, the Strategy governance is also made up of additional committees and work groups. Representatives of Illinois Farm Bureau and Oklahoma Farm Bureau have served on the Agriculture/Private Working Lands Technical Work Group. Recently we were made aware that this Technical Work Group will be recommending Farm Bill program changes to the Association of Fish and Wildlife Agencies (AFWA) based on suggestions within the Agriculture chapter of the MAFWA effort. We have expressed verbally and through written comment some of our concerns about the recommendations proposed in the chapter thus far. While the Work Group contains biologists from USDA-NRCS, missing from the discussion are USDA program staff that would provide valuable insight into how Farm Bill programs actually work, what farmers must do to qualify and participate, and how potential changes might be implemented. We oppose the use of this chapter for making Farm Bill recommendations from the Work group or for recommending some of the

practices mentioned in the Thogmartin paper while the Work Group is still missing knowledgeable contributions from USDA staff and diverse farmer groups.

As you know, Farm Bureau prides ourselves on our grassroots policy development process that is led by our farmer members. Our policy provides a framework that guides staff in our interactions with agencies, organizations, and entities like yours. It also includes policy positions on things like conservation, environmental stewardship, and the monarch butterfly. One important policy guides how our organization engages in Farm Bill discussions. These recently updated and approved policies will serve as the foundation for our discussions in 2018 on the next Farm Bill including components related to conservation and the other 11 titles of the Farm Bill. As such, we feel we must respectfully withdraw from the MAFWA Strategy efforts. We have a long history of carrying our farmers' messages into Farm Bill discussions and we feel working simultaneously within a different coalition will muddy the already complicated waters of Farm Bill debate.

We appreciate the monumental task you have undertaken, to articulate an overarching strategy for the region. As you know, many of our state Farm Bureau staff and farmer members are actively involved in the development of state monarch strategies. Those efforts take a lot of time and resources. We are also actively exploring ways to carry a more unified agricultural message into the pre-listing discussions with the US Fish & Wildlife Service.

Again, we thank you for your time and the offer of participation. We hope our organizations can continue to inform each other as we work for monarch conservation.

Sincerely,

American Farm Bureau Federation
Illinois Farm Bureau
Iowa Farm Bureau
Indiana Farm Bureau
Kansas Farm Bureau
Nebraska Farm Bureau
Oklahoma Farm Bureau
Texas Farm Bureau

cc:

Greg Sheehan, USFWS
Michael Gale, Special Assistant, USFWS
Dave Walker, USFWS
Tom Melius, USFWS
Aurelia Skipwith, DOI
Brian Klippenstein, USDA

To: aurelia_skipwith@ios.doi.gov[aurelia_skipwith@ios.doi.gov]
From: Geoff Pampush
Sent: 2018-01-26T14:07:09-05:00
Importance: Normal
Subject: Show you our Recovery Efforts
Received: 2018-01-26T14:08:01-05:00

Hi Aurelia,

Would love to show you some of our work to restore Endangered Species. You are invited to any and all of these. They are chronological:

Feb. 20 We are honoring Cong. Mike Simpson (R-ID) at our facilities in Boise, ID for his long term support of public:private partnerships through his role on Appropriations for more than a decade. He has specifically supported the FWS Recovery budget for grants to partners including those working to recover the California Condor and Aplomado Falcon. This will be an evening reception at our facility. We manage the largest breeding flock (20 pairs) of California Condors among the partners and produce 15-18 young each year which are released at The Grand Canyon and in California. We would be pleased to give you a "behind the scenes" look at the breeding facility and our administrative facilities as well.

Late May through mid-June Band juvenile Aplomado falcons at Laguna Atascosa NWR or close by. This would give you a chance to see the birds, the work being done by the FWS to restore habitat and meet the actors. We would also like to get you to Padre Island National Seashore (2 hours away) so that you could see the new nesting structures on North Padre Island and you could thank Mark Spier, the Superintendent, for his support of this partnership. The habitat he has just made available may be just enough for us to reach the Recovery goal of 60 pairs. His support (the previous Super was not helpful) is very important to the future of the Aplomado falcons and their recovery.

March - late September California Condor restoration in Grand Canyon and Zion Parks. We have wild nesting pairs to view and hopefully young in the nest cave which would be visible this year (we don't know yet). You could see the entire program and understand how far ranging these birds are and how and why we need hunters -- but hopefully hunting without lead ammo. We also release the young birds raised in Boise (mentioned above) in late September in the Grand Canyon. You could hold and release one of these birds if you would like. Specific date is not set yet.

Sept. 25-October 25 Trapping, banding and blood sampling Arctic peregrine falcons on South Padre Id. (TX). This will be our 41st straight year capturing these birds on their way to South America from the Arctic. You ride on an ATV, spot the peregrine, put out a pigeon with a noose harness on its back (this doesn't go well for the pigeons) and wait for the peregrine to come in and take the pigeon. When it does so, its feet become entangled in the nooses and it can't fly away (we have a little weight attached on a line to the pigeon). We then draw blood, band, and release the peregrine. We usually get 2-5 peregrines in hand in a half day. You could spend one day or a couple doing this -- it is great fun and its a great place to be -- right on the Gulf Coast along the beach and along the Laguna on the other side of the dune. We stay at South Padre. You could visit refuge staff as well as Padre Island Seashore staff as well. This project is a science program and is not specifically geared around recovery. However, we could also locate post

nesting Aplomado falcons which are always close by and nest within 1 mile of where we trap these peregrines. We trap every day so you could pick the time frame within this month long window.

It would be great to introduce you to one or more of these efforts, Aurelia. Just let me know if any are of interest and we can develop the details.

Best regards,

Geoff

Geoff Pampush

VP for Global Partnerships and External Affairs

406-388-7717

120 Gazelle Ln.

•

Belgrade, MT 59714

• USA

[Facebook](#) [Twitter](#)



To: Devito, Vincent[vincent_devito@ios.doi.gov]; aurelia_skipwith@ios.doi.gov[aurelia_skipwith@ios.doi.gov]; Christopher Stolte[christopher_stolte@ios.doi.gov]; Campbell, Joshua[joshua.campbell@sol.doi.gov]
From: Anderson, John M.
Sent: 2018-01-29T10:05:53-05:00
Importance: Normal
Subject: New request
Received: 2018-01-29T10:06:08-05:00

Morning folks,

I hope you had a great weekend. I have another client who has asked me to reach out and seek your assistance with a project permitting issue. This time it is a transmission line in Oklahoma that the client is looking to obtain ESA take coverage for impacts to American Burying Beetle during construction and operational activities. According to the client the Region 2 staff and regional solicitor have signed off on the low-effect Habitat Conservation Plan and it was transmitted to HQ in early December and has been in the Secretary's office since early January. Any chance we can meet tomorrow or Wednesday to discuss the particulars of this and see what can be done to shake things loose? This should be relatively straightforward and noncontroversial, and while the client does not want to make waves, as they are working on several other issues in this region and the regional staff have been good to work with, with a looming construction season and needing to have line in service no later than end of 2018 time is of the essence. Please let me know what might work with your schedules.

Many thanks in advance.

JA

John M. Anderson

Senior Policy Advisor

NOSSAMAN LLP

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To: Skipwith, Aurelia[aurelia_skipwith@ios.doi.gov]
From: John Scanlon
Sent: 2018-01-30T03:02:58-05:00
Importance: Normal
Subject: RE: DC trip
Received: 2018-01-30T03:03:27-05:00

Sounds great Aurelia, see you there at 6.45 pm. Please also text or WhatsApp me your mobile so I can get you just in case. My mobile is (b)(6). Best, John

John E. Scanlon
Secretary-General
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
Maison Internationale de l'Environnement
11-13, chemin des Anemones
1219 Chatelaine-Geneva
Switzerland

Phone: +41 22 917 81 49
Fax: +41 22 797 34 17
Skype: johnscanloncites
Twitter: @JohnEScanlon
Instagram: JohnEScanlon



From: Skipwith, Aurelia [mailto:aurelia_skipwith@ios.doi.gov]
Sent: 30 January 2018 2:21 AM
To: John Scanlon <john.scanlon@un.org>
Subject: Re: DC trip

John,

Let's do La Taberna del Alabardero: <http://www.alabardero.com/>. It's located at 1776 I Street, NW (Entrance on 18th St.). Phone Number:+1 - 202-429-2200.

Does 6:45 pm work for you?

Aurelia Skipwith
Deputy Assistant Secretary
for Fish and Wildlife and Parks

U.S. Department of Interior
1849 C Street, NW, Room 3148
Washington, DC 20240
(202) 208-5837

On Tue, Jan 23, 2018 at 9:21 AM, John Scanlon <john.scanlon@un.org> wrote:

Aurelia, all is locked in now for the 28th for dinner. I will be at the Lombardy Hotel on Pennsylvania Ave. Happy to rendezvous wherever best suits. My mobile just in case is (b)(6). Looking forward to catching up, Best, John

John E. Scanlon
Secretary-General
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
Maison Internationale de l'Environnement
[11-13, chemin des Anemones](#)
1219 Chatelaine-Geneva
Switzerland

Phone: +41 22 917 81 49
Fax: +41 22 797 34 17
Skype: johnscanloncites
Twitter: @John_CITES
Instagram: John_CITES



From: Skipwith, Aurelia [mailto:aurelia_skipwith@ios.doi.gov]
Sent: 22 January 2018 2:53 PM
To: John Scanlon <john.scanlon@un.org>
Subject: Re: DC trip

I'll keep Feb 28th blocked for dinner and just let me know as you figure your schedule out. Looking forward to it.

Aurelia Skipwith
Deputy Assistant Secretary
for Fish and Wildlife and Parks

U.S. Department of Interior
[1849 C Street, NW, Room 3148](#)
[Washington, DC 20240](#)
(202) 208-5837

On Sun, Jan 21, 2018 at 9:10 AM, John Scanlon <john.scanlon@un.org> wrote:

That would be great. At this stage I arrive 27 Feb and leave 1 March. 28 Feb may be open for dinner. If the agenda gets busy I am also look to coming a day earlier. Thanks, John

From: "Skipwith, Aurelia" <aurelia_skipwith@ios.doi.gov>
Date: Saturday, 20 January 2018 at 22:19
To: John Scanlon <john.scanlon@un.org>
Subject: Re: DC trip

Happy New Year John!

I'd love meet with you...maybe we can grab dinner, if that works for you.

Aurelia Skipwith
Deputy Assistant Secretary
for Fish and Wildlife and Parks

U.S. Department of Interior
1849 C Street, NW, Room 3148
Washington, DC 20240
(202) 208-5837

On Wed, Jan 17, 2018 at 11:02 AM, John Scanlon <john.scanlon@un.org> wrote:
Dear Aurelia

Greetings and Happy New Year 2018!

I will be moderating an event at UN HQ in NYC on 2 March to celebrate World Wildlife Day 2018. I will call past DC for two days on the way and hope we have the opportunity to catchup once again. I will also be in touch with our colleagues at the US FWS to arrange meetings but thought I would also let you know directly.

Kind regards

John

John E. Scanlon
Secretary-General
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
Maison Internationale de l'Environnement
11-13, chemin des Anemones
1219 Chatelaine-Geneva
Switzerland

Phone: +41 22 917 81 49
Fax: +41 22 797 34 17
Skype: johnscanloncites
Twitter: @John_CITES
Instagram: John_CITES



To: Aurelia Skipwith[aurelia_skipwith@ios.doi.gov]
Cc: Devito, Vincent[vincent_devito@ios.doi.gov]; Christopher Stolte[christopher_stolte@ios.doi.gov]; Campbell, Joshua[joshua.campbell@sol.doi.gov]
From: Anderson, John M.
Sent: 2018-01-31T09:49:43-05:00
Importance: Normal
Subject: RE: New request
Received: 2018-01-31T09:49:57-05:00

Thanks so much for the follow-up Aurelia. Based on a conversation with my client last night it looks like this project HCP was cleared to be published in the Federal Register and is expected to run either Friday or Monday. I'm not sure if anyone on this thread had a role in that and if so thank you.

So for now I think we're good but I would welcome the opportunity to do a bit of forensic analysis to better understand where things got held up on this so that I can better advise clients moving forward on timing and contact points along the way as their applications are being reviewed. Please let me know when you, Josh and others are free in the coming weeks for a call or meeting.

Any word on Skookumchuk?

Thanks again.

JA

John M. Anderson

Senior Policy Advisor

NOSSAMAN LLP

1666 K Street, N.W., Suite 500

Washington, DC 20006

janderson@nossaman.com

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D 202.887.1441



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From: Aurelia Skipwith [mailto:aurelia_skipwith@ios.doi.gov]
Sent: Wednesday, January 31, 2018 3:20 AM
To: Anderson, John M.
Cc: Devito, Vincent; Christopher Stolte; Campbell, Joshua
Subject: Re: New request

John,

Unfortunately, I'm not able to meet in person today, but could give a call later today in order to get a better understanding of the project. Does that work? Thank you.

Aurelia Skipwith
Deputy Assistant Secretary
for Fish and Wildlife and Parks

U.S. Department of Interior
1849 C Street NW, Room 3148
Washington, DC 20240
202-208-5837

On Jan 29, 2018, at 10:05 AM, Anderson, John M. <janderson@nossaman.com> wrote:

Morning folks,

I hope you had a great weekend. I have another client who has asked me to reach out and seek your assistance with a project permitting issue. This time it is a transmission line in Oklahoma that the client is looking to obtain ESA take coverage for impacts to American Burying Beetle during construction and operational activities. According to the client the Region 2 staff and regional solicitor have signed off on the low-effect Habitat Conservation Plan and it was transmitted to HQ in early December and has been in the Secretary's office since early January. Any chance we can meet tomorrow or Wednesday to discuss the particulars of this and see what can be done to shake things loose? This should be relatively straightforward and noncontroversial, and while the client does not want to make waves, as they are working on several other issues in this region and the regional staff have been good to work with, with a looming construction season and needing to have line in service no later than end of 2018 time is of the essence. Please let me know what might work with your schedules.

Many thanks in advance.

JA

John M. Anderson

Senior Policy Advisor

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To: aurelia_skipwith@ios.doi.gov[aurelia_skipwith@ios.doi.gov]
From: WAFWA
Sent: 2018-02-01T11:31:08-05:00
Importance: Normal
Subject: On the Horizon - News from WAFWA
Received: 2018-02-01T11:33:19-05:00

The Western Association of Fish and Wildlife Agencies (WAFWA) gathered for their annual mid-winter meeting in early January, with record attendance. State wildlife agency directors and conservation professionals from across the West attended a number of productive work sessions and committee meetings, including discussions centered around chronic wasting disease (CWD). CWD is an infectious disease that affects cervid species, including mule deer and elk. It represents a significant threat to the future health and vitality of free-ranging cervid resources in western North America. The Wildlife Health Committee and the Mule Deer Working Group collaborated on a set of adaptive management recommendations that are now available online. Recommendations in the document reflect the best science available from the states that are grappling with the disease.

"The management of CWD in our free-ranging deer and elk populations will require a coordinated approach from agencies so we can all learn from each other what is effective and what is not," said Bob Broscheid, Colorado Parks and Wildlife Director, who is the director sponsor of WAFWA's Mule Deer Working Group. "For agencies that would like to experiment with different population management options to slow or stop the spread of CWD, this document provides a template that will allow us to learn together in a coordinated way."

WAFWA recently convened a forum of conservation professionals working on lesser prairie-chicken recovery efforts to share information and strategize how conservation efforts for the bird can be enhanced. The meeting took place at the Arcadia Conservation Education Area in Edmond, OK Jan. 17-18, 2018, and was hosted by the Oklahoma Department of Wildlife Conservation, WAFWA, the Natural Resources Conservation Services (NRCS), and the U.S. Fish and Wildlife Service (USFWS). More than 60 people attended, including representatives of state and federal agencies and nonprofit organizations that are working on a variety of efforts to conserve the grassland bird. The conservation partners forum was designed to identify paths forward to enhance current conservation strategies and develop new strategies to conserve grasslands and the lesser prairie-chicken. The focal point of the meeting was WAFWA's Lesser Prairie-chicken Range-wide Conservation Plan.

"Everyone at the table during the meeting shares the same goals of improving habitat and ultimately increasing populations of the lesser prairie-chicken across its range," said J.D. Strong, Director of the Oklahoma Department of Wildlife Conservation and Chairman of the Lesser Prairie-Chicken Initiative Council. "Now comes the real work of executing our action items, and I am confident that we can make a real difference for long-term health of the prairie chicken population and the working landscape where it lives."

The Property and Environment Research Center (PERC) has published an in-depth article about efforts to conserve the lesser prairie-chicken in five western states. The article explains how a unique alliance of wildlife agencies, conservation organizations, private landowners, and industry partners have collaborated to help recover the lesser prairie-chicken while preserving traditional land uses.

The sweet trill of songbirds provides a musical backdrop across sagebrush country. These unique songs do more than make us smile — they also serve as barometers for the health of the range. Some of these birds need sagebrush. Others need woodlands. The abundance and diversity of songbirds across a specific region gives us a glimpse as to how the ecosystem is faring.

The Sage Grouse Initiative, led by the Natural Resources Conservation Service, has released the newest component of the [SGI Interactive Web App](#), called the **Songbird Abundance layer**. These custom maps represent the predicted abundance of nine species of sagebrush- and woodland-obligate songbirds within the U.S. distribution of sagebrush-steppe ecosystems.

The new songbird abundance maps aim to bolster multi-species conservation across the American West. The innovative new songbird mapping tool — created by the U.S. Fish and Wildlife Service’s Habitat and Population Evaluation Team with the support of WAFWA’s Sagebrush Science Initiative — will help partners target conservation practices to benefit declining songbird populations.

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From: Fullerton, David K
Sent: 2018-02-01T12:16:58-05:00
Importance: Normal
Subject: RE: Call information for tomorrow's Delta smelt science call at 9 am pst/12 pm est
Received: 2018-02-01T12:21:24-05:00
[LOBO 2017 Report FINAL.pdf](#)

LOBO Report

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From: Watts, John (Feinstein) [mailto:John_Watts@feinstein.senate.gov]
Sent: Wednesday, January 31, 2018 2:04 PM
To: Aurelia Skipwith; Bradley Cavallo; Durst, Garrett; Ewell, Austin; Fullerton, David K; Julia Jester; Smith, Lynda A; Matt Nobriga; Mike Chotkowski; Petersen, Scott (Scott.Petersen@mail.house.gov); Acuna, Shawn C; Travnicek, Andrea
Subject: Call information for tomorrow's Delta smelt science call at 9 am pst/12 pm est

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Independent Review Panel (IRP) Report for the 2017 Long-term Operations Biological Opinions (LOBO) Biennial Science Review

**A report to the
Delta Science Program**

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January 2018

**Delta Stewardship Council
Delta Science Program**



Scope and Intent of Review: This report presents findings and opinions of the LOBO Independent Review Panel (IRP) assembled by the Delta Science Program in 2017. The intent is to provide objective feedback to the U.S. Bureau of Reclamation (Reclamation), the National Marine Fisheries Service (NMFS) and the U.S. Fish & Wildlife Service (USFWS) regarding the efficacy of regulatory actions prescribed by the agencies' Long-term Operations Biological Opinions' (LOBO) Reasonable and Prudent Alternative (RPA) actions for Central Valley water operations. The objective feedback and recommendations to the agencies are intended to inform rapid decision-making regarding system-wide water operations and effects on threatened/endangered species, evolutionarily significant units, or distinct population segments.

The last annual review was in 2015 and this is the first of two or more biennial reviews. This review primarily focuses on: (1) Stanislaus River Watershed/Eastside Division RPA actions across Water Years (WYs) 2011-2017, (2) evaluation of the Enhanced Delta Smelt Monitoring Program study plan and implementation, (3) Old and Middle Rivers (OMR) Index Demonstration Project, and (4) draft proposed Shasta RPA amendment.

After reviewing a required set of written documents (Appendix 1), the IRP convened at a public workshop in Sacramento, CA on 4-7 December 2017. The first day of the 4-day workshop included a field trip to the Stanislaus River to provide an opportunity for the IRP to observe floodplain habitat rehabilitation and gravel augmentation efforts in the Stanislaus River between Goodwin Dam and Buttonbush Park.

The second and third days included agency presentations and provided a forum for the IRP to interact and consider information presented on water operations and RPA Actions as implemented in past years or proposed for subsequent years. The IRP heard public comments near the end of each day's session. On the fourth day, the IRP deliberated in a private session beginning at 9:00 a.m. to prepare and present their initial findings at the public meeting at 2:00 p.m.

Following the IRP presentation of preliminary findings, there was an opportunity for agency representatives, members of the public, and the IRP members to comment and exchange impressions and information. Subsequent IRP communication and deliberations were conducted via email in the course of drafting this final report.

EXECUTIVE SUMMARY

Water Year (WY) 2017 was the first wet year following five consecutive years of drought conditions in California's Central Valley. It was also the first year the Long-term Operations Biological Opinions independent review panel was convened on a biennial rather than an annual schedule. The 2017 Independent Review Panel (IRP) remains positive about progress toward the incorporation of more direct links between the biological and physical components of the approaches used to guide water operations. The development of methods that explicitly link the success or failure of achieving desired temperatures, flows and other physical targets to the biological/ecological responses of the listed species is the only way that the intended goals of the RPA actions can be assessed in a scientific context. However, after nearly a decade of implemented RPA actions across water years ranging from critically dry to wet, there continues to be little evidence that declines in populations of listed species have been arrested or reversed.

The current IRP report focused on four major topics including: (1) the Stanislaus River, (2) the Enhanced Delta Smelt Monitoring (EDSM) program, (3) the Old and Middle River (OMR) index demonstration project, and (4) the draft proposed Shasta RPA amendment.

This year's LOBO review included a tour of the **Stanislaus River** that allowed the IRP to better understand the challenges faced in managing this system. It also provided a first-hand perspective on the efforts aimed at habitat enhancement for salmonids, including gravel augmentation and restructuring secondary channels in the floodplain. Land access and availability of funding are key limitations to the habitat enhancement efforts. Most importantly, it may be difficult – perhaps impossible – to demonstrate measurable positive effects of such local habitat enhancements on salmonid populations. However, the IRP discussed a number of ways that general ecosystem benefits and improvements in survival of salmonid early life history stages could be evaluated.

The Stanislaus Operations Group (SOG) appears to be functioning with a high level of coordination among the agencies and reflects a positive approach to adaptive management. With respect to the management of pulse flows and temperatures, the IRP recognized the challenges faced by SOG in meeting the co-equal goals of providing a reliable water supply and support for ecosystem functions. Water in the Stanislaus is extremely over-allocated and supplies available to Reclamation may be insufficient to meet all of the demands. In addition, the source of inflow to the reservoirs is derived from snowmelt and options for releasing water from mixed depth strata is constrained

by the existing infrastructure. Given current climate change predictions, snowpack in the mountains may be severely reduced by the end of the century. In the long-term, infrastructure limitations, together with predicted reductions in cold-water inflows into the reservoirs, will only compound the challenges faced by water operators in the Stanislaus system.

Pulse flows from the reservoirs on the Stanislaus are intended to reduce the risk of dewatering redds and to trigger adult and juvenile salmonid migrations at the appropriate times. Although the shape and timing of pulse flows intended to trigger salmonid migrations could be important, little direct evidence was provided to support the contention that the pulses, as designed, are actually triggering migrations. The IRP suggested that some simple experimentation with the shape and timing of pulse flows could refine understanding of any underlying relationship between flows and migration events.

The **EDSM program** is intended to provide much needed refined estimates of Delta Smelt abundance and distribution. This was the first full year of the EDSM and the statistical design was viewed by the IRP as a positive step toward the overall goal. However, despite the rigorous statistical approach, the IRP was surprised by how much the collection of a single fish could affect the abundance estimates. Confidence intervals around the abundance estimates were very large and potential sources of that variation were considered by the IRP. The IRP identified a number of issues with the implementation of the sampling design, abundance estimates, sample volume calculations, sampling gear effectiveness and other issues (e.g., stopping rules) that may present challenges to achieving the EDSM intended objectives. It remains unclear if EDSM can fulfill its seven stated objectives and the IRP encourages the USFWS to proceed as rapidly as possible to evaluate the complete suite of objectives for this program, especially the entrainment estimation goal. A reliable estimate of Delta Smelt population size is essential for determining a jeopardy level and allowable take for this species.

The **OMR Index demonstration project** was presented to the IRP in a manner that seemed to imply that the OMR Index and the USGS Gage Data Method were separate methodologies being equally evaluated for their success in representing OMR flow. The IRP considered the advantages and disadvantages of each approach from the perspective of the agencies. However, the bottom line is that the RPA action uses the USGS Gage Data Method, while the water operators would prefer to use the OMR Index Method. The correlation between the OMR Index and the USGS Gage Data, as presented at the workshop, was inadequate for assessing how well the Index predicts the USGS Gage Data. The presented assessment also failed to focus on the critical conditions of interest, which are the tidally averaged OMR flows in the range of

-2500 cfs to -5000 cfs. There was no apparent attempt to understand the reasons underlying differences between the USGS Gage Data values and OMR Index values. The IRP provided both a detailed critique of the evaluation presented, as well as an algorithm that could provide a path to improved predictions of gage-based measurements.

IRP discussions on the draft proposed **Shasta RPA amendment** focused primarily in two areas: (1) critical temperature thresholds for survival of salmonid early life history stages, and (2) use of a 7-day average daily maximum temperature (7DADM) versus the daily average temperature (DAT) for meeting temperature compliance targets in the Sacramento River.

Critical temperatures for survival of Chinook Salmon embryos differ between laboratory and field observations. Martin et al. (2017) proposed a model to show that the discrepancy could be attributed to differences in water flow velocities between the lab and field. They suggested that water flow and temperature mediated oxygen limitation for embryos in redds and was the explanation underlying observed differences in thermal tolerance of embryos. The proposed Shasta RPA amendment uses this information to adjust temperature compliance points in the Sacramento River. The model presents a convincing case that oxygen deprivation in redds explains the discrepancy between lab and field observations, but the IRP expects that model predictions of embryo survival will still contain considerable uncertainty for a number of reasons that were discussed. Key among them is that temperature-related mortality should be distinguished from all other sources of mortality through the fry stage. Another interesting idea to explore is that temperature within the redds may be higher than that in the overlying water column due to direct radiant heating of the gravel coupled with reduced water flow velocity immediately above and within the gravel.

A broader consideration of temperature management for the Sacramento River involved the potential applicability of a conceptual model proposed by Mount et al. (2016). This model is based on experience of water managers in drought-prone regions of Australia. There are substantial differences between California's Central Valley and the Australian system from which the model was developed, but perhaps the most important recommendation of the Mount et al. (2016) model is the essential nature of planning for drought rather than reacting to drought.

The IRP was unable to evaluate the tradeoffs between the use of 7-DADM and DAT for meeting temperature compliance targets without further analysis. Discussion of this topic centered on limitations of the 7DADM approach, the need to evaluate operational feasibility of the criterion, and the need to identify the biological relevance of the two alternatives. The IRP offered some alternative averaging approaches that could be

considered in addition to the 7DADM. Included among the suggestions was a weighted moving average that represented fluctuating temperatures downstream at Jelly's Ferry better than the arithmetic mean over 7 days.

The rationale in the draft proposed RPA amendment for changing the temperature metric from DAT to 7DADM and moving the temperature compliance point upriver seems to rely on a combination of information sources; including the U.S. EPA (2003) report, consideration of predictions from the Martin et al. (2017) model, and recommendations of previous LOBO panels (2014, 2015), which offered an opinion for conserving cold-water resources by moving the temperature compliance point upriver where spawning was actually occurring. Lacking any scientific analysis to the contrary, moving the temperature compliance point upriver still seems reasonable.

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INTRODUCTION

Surface water resources of California's Central Valley are managed through a highly-engineered storage and delivery system to meet the needs of farms, industry, and millions of people who depend on these interconnected watersheds. A suite of rules and water rights govern the distribution of water, affecting flows and water quality of riverine and deltaic ecosystems associated with California's Central Valley. These and other anthropogenic alterations over time have been accompanied by substantive changes in aquatic flora and fauna, including a persistent decline in native fishes. With the passage of the Central Valley Project Improvement Act (CVPIA) in 1992, the U.S. Congress recognized the need for water management to consider the requirements of fish and wildlife. In 2009, California's state legislature adopted the coequal goals of improving the reliability of the water supply and protecting ecosystem health, including native fishes of the Central Valley (Delta Reform Act). Some of these fish species, or distinct populations, have been afforded federal protection under the Endangered Species Act (ESA). As a result, government agencies have been charged with developing ways of protecting these populations from further jeopardy associated, directly or indirectly, with water operation projects in the region.

Five consecutive years (2012-2016) of persistent drought recently presented a major obstacle to achieving the coequal goals of maintaining both a reliable water supply and a healthy ecosystem capable of supporting viable populations of threatened and endangered native fish species. While near-record precipitation in 2017 broke the most recent drought, much of it fell as rain and the runoff filled reservoirs more rapidly than anticipated. This type of variable oscillation in dry and wet years thus far has evaded long-term prediction and remains a persistent challenge to water operations.

Most of the natural water storage capacity in the form of historical riverine wetlands in this highly-engineered system has been lost over the last century (Cloern et al. 2016). This limits options for water management to the regulation of flow volumes and water temperatures by dams and pumping facilities. When water supplies are adequate, properly adjusting the "knobs" to control water temperature and flow volumes released into the rivers can provide acceptable results for some purposes. However, a multi-decadal warming trend in California's climate is expected to continue through the balance of this century, increasing the frequency and severity of extreme droughts and floods. Water operations in years characterized by extreme conditions will have limited options for meeting RPA actions, particularly those intended to provide cold water resources to support viable salmonid populations below dams. For this and a number of other reasons, the candid opinion of many senior salmon scientists and government

policy experts familiar with conditions in the Central Valley is not optimistic with respect to the future fate of wild salmon in the system (Franks and Lackey 2015).

The IRP reiterates the point expressed by previous panels that expectations for both water supply and extant ecosystem components in California's Central Valley will be forced to adapt to a "new normal" driven in large part by climate change.

Background on the LOBO RPA action review process: NOAA's National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) have issued Biological Opinions (BiOps) on state and federal long-term water operations affecting freshwater input to the Sacramento-San Joaquin Delta ecosystems. The BiOps include Reasonable and Prudent Alternatives (RPA) designed to alleviate jeopardy to listed species and adverse modification of critical habitat. NMFS' BiOp required the U.S. Bureau of Reclamation (Reclamation) and NMFS to host a workshop each year to review the prior water year's operations and to determine if any measures prescribed in the RPA actions should be altered in light of new information (NMFS' OCAP Opinion, section 11.2.1.2 of the 2009 RPA with 2011 amendments, starting on page 9). Amendments to the RPA actions must be consistent with the underlying analysis and conclusions of the BiOps, and must not limit the effectiveness of the RPAs in avoiding jeopardy to the listed species, or result in adverse modification of critical habitat. In April 2016, NMFS and Reclamation agreed to temporarily change the frequency of the science review from annual to biennial from 2016 through 2020. Consequently, there was no annual review in 2016 and this year (2017) is the first of the biennial reviews.

The intent of the biennial review of the Long-term Operations Biological Opinions (LOBO) is to provide all of the involved agencies with an independent perspective that is useful in informing management as to the effectiveness of operations and regulatory actions prescribed by the RPAs. In addition, the LOBO aims to provide recommendations and assessments that may assist the agencies in making timely and scientifically-justified adjustments to implementation of RPA actions when necessary for future water operations.

Since the BiOps were issued, NMFS, USFWS, Reclamation, U.S. Geological Survey (USGS), California Department of Fish and Wildlife (CDFW) and the Department of Water Resources (DWR) have been performing scientific research and monitoring in concordance with the implementation of the RPAs. Technical teams and/or working groups, including the geographic divisions specified in the NMFS' BiOp, have summarized their data and results following implementation of the RPA actions within technical reports. The data and summary of findings related to the implementation of the RPAs provide the primary context for scientific review regarding the effectiveness of the RPA actions for minimizing the effects of water operations on listed species and critical

habitat in the Sacramento-San Joaquin watersheds. A subset of these technical reports was provided for review by the 2017 LOBO IRP (see Appendix 1).

General charge and scope for the 2017 LOBO IRP: The first annual review of long-term water operations and the BiOps considered all of the RPA actions. In subsequent years, the panel's charge has focused on a subset of RPA actions.

This year's (2017) first biennial review included a consideration of:

- (1) Stanislaus River Watershed/Eastside Division RPA actions across water years 2011-2017;
- (2) Evaluation of the Enhanced Delta Smelt Monitoring Program's study plan, implementation, lessons learned, and opportunities for improvement;
- (3) Results from the Old and Middle Rivers (OMR) index demonstration project; and
- (4) Draft proposed Shasta RPA amendments.

As in previous years, the specific scope of the 2017 LOBO review was defined by questions posed to the IRP by the agencies and technical teams/task groups that presented materials for review. This IRP report addresses each of the 14 questions posed from a scientific perspective. In addition, the report provides observations, opinions and recommendations where, in the panel's opinion, they seemed related to the research being conducted and potentially useful to agency staff for consideration.

Acknowledgments: The IRP appreciates and acknowledges the efforts of the agency and technical team representatives and contractors who responded to questions and suggestions made by previous panels, prepared the written materials, organized and led the Stanislaus River tour, and delivered the workshop presentations. The IRP members are cognizant that much of the material has to be compiled, analyzed, and organized in a relatively short time. Even though the last review was two years ago, the IRP recognizes that government agency personnel faced substantial challenges in contending with effects of dry to wet annual climatic conditions, as well as a dynamic regulatory environment. Despite the many competing demands on the workshop participants, the materials were largely presented with the usual professionalism. The IRP wishes to express a special thanks to John Callaway (Lead Scientist), Lindsay Correa (Program Manager), and the staff of the Delta Science Program for providing the organization and logistical support to facilitate our task. In particular, Dylan Stern attended to a variety of technical and provisional details in support of the IRP's efforts before, during, and following the workshop. Title page photo credit: R.T. Kneib (Goodwin Dam, December 4, 2017).

COMMENTS ON CONDITIONS & RPA ACTIONS IN WATER YEARS 2011-2017

General comments and observations

As we approach nearly a decade since RPAs have been implemented, there is scant evidence of stabilization or reversal in the decline of protected fish populations in the Central Valley and Delta. While not all stressors can be controlled and mitigated by the managing agencies, several efforts could improve the ability of the agencies to document and communicate any benefits produced by RPA actions, and the ability to respond rapidly and appropriately to changing conditions. With this aim, the IRP offers the following general observations to provide additional context for the findings and suggestions in this first biennial LOBO report:

Continued need for linking RPA actions and biological responses.

It was encouraging to note the continuing effort to link physical criteria in RPA actions to biological responses, but there continues to be substantial capacity for improvement in this area. For example, as discussed in further detail on page 14, the effects of gravel augmentation may not immediately produce measurable impacts to the number of spawners or survival. However, the benefits of these projects in producing food resources for salmon could be enumerated through documentation of increases in primary and secondary productivity using benthic macroinvertebrate surveys. While increased productivity is only one benefit of the gravel augmentation, the data could be used in bioenergetics models to demonstrate how the gravel projects contribute to growth and survival, and how much more gravel is needed to support a viable population.

Expecting immediate positive population responses to RPA actions in any given year would be overly optimistic, but evaluating impacts to individual life stages is possible through the use of field observations and numerical models.

Need for distinguishing habitats from RPA action targets.

The IRP encourages agencies to better define their targets as something other than “habitat,” unless they are targeting the sum of physico-chemical and biological conditions. Many reports and presenters used the term habitat to mean the number of river miles maintained at a given target temperature range. However, habitat is defined as the place where a species normally lives (Calow 1998) and includes a complete suite of physico-chemical characteristics required by that species to survive, grow and

reproduce. Habitats often comprise microhabitats (e.g., conditions within salmonid redds) or sub-habitats (e.g., areas used for salmonid spawning or rearing) that are essential for the survival and growth of a particular life stage, and also include biological interactions that may restrict access to physical and chemical conditions that are suitable for survival and recovery. A certain water temperature is not the only defining characteristic of suitable habitat for salmonids. As such, individual actions alone, such as meeting temperature targets or adding gravel, do not necessarily reflect creation of suitable habitats. In addition, some RPA actions (e.g., floodplain reconnection) lack identification of measurable targets for enhancement of habitat components. The result is an inability to identify biologically-relevant outcomes for success of projects and an inability to assess progress towards that success. Thus, the IRP encourages the use of caution and explicit definition when discussing habitat rehabilitation and enhancement activities.

Need for communicating lessons learned in all water years.

Given the biennial cadence of this review, and the importance of WY 2016 as a transition year, the IRP expected more information on WY 2016 in some of the report and/or presentations. Since this is now a biennial review, the IRP expects content that reflects the previous two years. There was a tendency to present comparisons between WY 2015 (the last year of an extreme drought) and WY 2017 (an extreme wet year) to demonstrate management and operational opportunities, challenges, and decisions. While the IRP appreciates the challenges in managing these difficult periods, it would have been helpful to hear the agencies synthesize the lessons that were learned from a more moderate year (WY 2016). An analysis of recovery during the first post-drought WY may have helped to show how water operations and fish species responded in a transition year within a longer period defined by precipitation extremes. The information from WY 2016 is expected to be useful in planning recovery responses after the next drought event.

Coming to terms with the new normal.

Increased frequency, severity, and duration of extreme droughts, punctuated by wet weather conditions, is characteristic of the changes projected by global circulation models of climate change. The recent occurrence and severity of extreme events suggest that weather patterns in California may already be transitioning to a “new normal.”

Depending on the assumptions made regarding carbon emissions over the coming decade, as well as the potential changes in the impacts of various climatic oscillations

(e.g., Stenseth et al. 2003, Kelly and Gore 2008, Mantua et al. 1997), the projected potential loss of snowmelt water over the coming century may have serious consequences for both water operations and salmonid populations. Large-scale predictions of impending climate change suggest the likelihood of declining snow water availability over the next 100 years (Table 1).

By some estimates, snowpack in the southern mountains of the West, including the northern Sierra Nevada range, is projected to virtually disappear by the end of the 21st century (Easterling et al. 2017). More of the region's precipitation is expected to enter western watersheds as rainfall instead of snowmelt, potentially reducing the storage of available cold-water resources in reservoirs to support viable populations of endangered native fishes downstream. Precipitation events also are expected to become less evenly distributed through time, with a projected increase in both the intensity and frequency of storms, which will provide additional challenges for water operations in terms of balancing the needs for flood control and drought preparations. Therefore, some of the management options in the CVP system should be reconsidered in light of these extreme changes. As an example, forecasted components of the New Melones Index (Index) will be more uncertain, and the Index thresholds for water year type may require adjustment as a result.

Table 1. Projected April 1 deviations from “average” Snow Water Equivalents for the combined San Joaquin, Sacramento, and Trinity Rivers (derived from Cayan et al. 2008).

Elevation	Years 2005-2034	Years 2035-2064	Years 2070-2099
1000-2000 m	-13% to -48%	-26% to -68%	-60% to -93%
2000-3000 m	+12% to -33%	-8% to -36%	-25% to -79%
3000-4000 m	+19% to -13%	-2% to -16%	-2% to -55%
All Elevations	+6% to -29%	+12% to -42%	-32% to -79%

Agencies are encouraged to create and test various climate oscillation and climate change scenarios as a means of anticipating new conditions that historical records might not predict. Whether or not impacted by loss of snowmelt contributions to the

system, many water resource agencies are facing the prospect of altering management strategies to anticipate changes in water availability with climatic oscillations and, more importantly, to begin to plan for climate change. While it is recognized that real-time management is occurring in the Sacramento-San Joaquin system, long-range planning for climate change is essential for setting expectations of water users and for viability of threatened and endangered species. A number of approaches exist within the literature for long-range climate change planning. As an example, the Southwest Florida Water Management District applies a wet season and dry season (each being 30 years in duration) management strategies that reflect significant changes in community structure as climatic oscillations occur (e.g., see Munson, et al. 2005, Munson and Delfino 2007, and Gore et al. 2016). Wilby (2016) and Brown et al. (2012) also suggests some strategies for managing rivers and water resources in a changing climate.

Stanislaus River Watershed/Eastside Division RPA Actions Across Water Years 2011-2017

Stanislaus River tour for the 2017 LOBO Review.

The IRP appreciated the opportunity to visit the Stanislaus catchment and the gravel bed augmentation and floodplain rehabilitation work being performed. Although the panel members are familiar with various components of the Central Valley Project (CVP), none have had the opportunity to visit all areas. Such field trips allow the IRP to better understand the topography, physical conditions, and challenges faced by operators and managers.

Ongoing efforts include creating new gravel-bed spawning areas and mitigating for loss of natural floodplain habitats in the Stanislaus River below Goodwin Dam. These actions follow a general assumption that gravel augmentation mitigates against the loss of access to upstream salmonid spawning habitat. However, the gravel volumes that have been put in place so far on the Stanislaus are only a fraction of that which was initially prescribed, and it is not clear that the RPA prescriptions are adequate to produce desired ecological outcomes. In addition, both gravel augmentation and floodplain rehabilitation are relatively expensive undertakings that, in order to meet desired outcomes, would require monitoring and maintenance. In order to justify the continued effort, it will be necessary to demonstrate a measurable benefit from these activities in terms of improvements in salmonid survival and production.

It may be difficult, if not impossible, to directly demonstrate system-wide increases in salmonid production as a result of these habitat enhancements. However, measurable improvements in local conditions known to support survival and growth of salmonid early life stages would demonstrate general ecosystem benefits. For example, one measure of success could include changes in primary production, secondary production and, perhaps forage fish production, in river reaches adjacent to the mitigation efforts.

There are at least two possible methods to demonstrate the establishment of these communities. Assuming that most of the colonization by periphyton and macroinvertebrates will be derived from upstream sources, sampling both source areas and the new sub-habitats could create an index of success. In some rivers, macroinvertebrate communities were virtually identical to upstream sources within 6 to 8 weeks of placement of a new gravel bed, while forage fish communities were identical in about a year from initiation (Gore 1982). Examination of colonization and establishment of functioning communities is an important tool in examining the success of restoring river ecosystems (Gore and Milner 1990). An alternative method that does not require comparison to sources of colonizers (if none exist upstream, for example), is to sample similar gravel bed communities along the length of the river, tributaries, and adjacent catchments to create a “reference” condition as a target for the new gravel beds (Hughes et al. 2010). Either method can be used to demonstrate success without having to rely upon production of top carnivores, which may take years to create. In addition, using a modeling system such as PHABSIM, a simple mapping technique within the model which can compare pre- and post-augmentation spawning habitat, to map or assess the increases in spawning habitat could be used to demonstrate the benefit of gravel augmentation.

Stanislaus Operations Group (SOG).

Strengths of the program include the extensive monitoring being conducted in the basin, and the integration of the field data (e.g., weir counts, water and air temperatures) with weather forecasts to focus SOG operational recommendations in real time, with direct impacts on the timing and duration of pulse flows. In addition, for the most part, the pulse flows are well justified based on biological processes. For example, the transition to a three-peak pulse and the October implementation (prior to peak spawning) is logical given the desire to avoid construction of redds at higher elevations that will be dewatered later in the year. Furthermore, there appears to be a high level of coordination between NOAA Fisheries, Reclamation, and other SOG members. This reflects a strong attempt at adaptive management.

The program could be improved in a couple of key ways. Some of these improvements are related to variability in water years, and thus are addressed under Question 3. However, specific to the SOG shaping of releases, the committee identified one key uncertainty regarding evaluating the effects of the pulses. Despite the strong qualitative logic model linking biological processes to the design of flow pulses, quantitative analysis to demonstrate that the pulse flows are indeed achieving the intended biological outcomes seems lacking. For example, the primary objective of the fall pulse flows is to trigger migration up into the Stanislaus while operators are drawing the reservoir down. While it is clear the SOG is designing the fall pulses to avoid redds from being dewatered, it is not clear that the pulses, as designed, actually trigger migration. In addition, it is not clear if, or how, the shape of the pulse impacts the timing of fish arriving in the basin. The pulse design for migration cueing could be important. However, it should be based on a more refined understanding and justification that is ideally numerical (e.g., Sykes et al. 2009) and/or determined experimentally. Similarly, field observations could be examined to investigate the effectiveness of spring pulses in achieving their outcomes of reducing temperatures, inundating shallow habitats, and flushing smolts out of the river and through the Delta. Such an analysis would be beneficial both for shaping pulses and for prioritizing areas for restoration actions.

Management of pulse flows, temperature and the challenges of interannual hydrologic extremes.

Operating the series of dams on the Stanislaus River to provide for a reliable water supply and supporting ecosystem functioning is particularly difficult for many reasons. Perhaps most fundamentally, Stanislaus River water is extremely over-allocated and the supply available to Reclamation may be insufficient to meet the demands of all flow requirements (State Water Resources Control Board 2016).

Furthermore, much of the inflow to reservoirs on the Stanislaus is from snowmelt and options for releasing water that is from mixed depth strata is limited. For example, adjusting the temperature releases from New Melones dam is not feasible under most circumstances. The cooler hypolimnion water can only be released through a tunnel at the base of the New Melones Dam at very low reservoir elevations. In addition, the majority of New Melones cool water pool is held back by an additional barrier, the submerged original Melones dam, directly upstream of the New Melones dam.

There is no universally accepted approach to maintaining species subject to hydrologic extremes, especially when much of a species' historical habitat is unavailable and the population of interest is near the limit of the species' historical range (e.g., Chinook Salmon in California). However, some key concepts can be applied in the future as a

general framework for thinking about managing extreme events in modified systems. These concepts emphasize robustness (Herman et al. 2015), a condition where the species' sensitivity to the disturbances is reduced, and resiliency, where species are capable of recovering following a disturbance (Walker et al. 2004).

First, a synthesis of lessons learned would be a useful exercise for the agencies. Such a synthesis should summarize the hydrologic year at a weekly to monthly time scale, outline operational decisions in response to data and associated releases, examine measures of how operations and extreme conditions impacted fish, and identify what additional information and/or alternative actions would be needed in a future event.

Second, there is a growing body of literature on managing novel ecosystems. Even absent the effects of extreme conditions, structure and function of the Stanislaus River ecosystem was sufficiently altered over the last century to classify it as novel. Key species (e.g., Spring-run Chinook) have been lost, invasive predators have been introduced, and spawning and rearing habitats of salmonids have been relocated to historically unsuitable reaches below the dams. Hobbs et al. (2006) argues for examining the persistence and value of the new ecosystem, and for managing these types of systems in a way that is fundamentally different from current approaches. For example, Seastedt et al. (2008) suggest that management should emphasize maintaining genetic and species diversity, as well as the biogeochemical characteristics that favor the desirable species, rather than attempting to recreate historical conditions. If the system is stable, what are the costs and risks of attempting to guide the system to a more desirable state? If the system is changing, what are the costs and benefits of maintaining current species compositions? Identifying where sites fall along a range of wild to intensively modified will help managers prioritize conservation of the least impacted systems and identify systems in which it is not feasible to maintain or restore historical species communities.

Third, the increasing frequency of extreme events raises the need to revisit the guiding vision for the watershed. In unaltered river systems subject to extreme events, critical refuges from droughts and floods are provided by side channels, floodplain habitats, deep pools, and other complex habitats that are largely missing from the modern Stanislaus River. Resource managers may want to reconsider what outcomes are feasible for this system. Gravel augmentation and other habitat enhancements are likely to become increasingly important for species' survival, but there is no evidence that the agencies will be able to create and maintain enough of these habitats to produce a measurable benefit at the population level. The RPA action requiring the addition of 50,000 yd³ of gravel by 2014, and 8,000 yd³ annually thereafter, has been stalled by lack of funding, land access, and other issues.

Other RPA actions also lack measurable, time bound objectives (e.g., floodplain restoration, predation management) that link to biologically-relevant outcomes. Effects of RPA actions can be measured in a variety of ways (e.g., primary and secondary production, diversity, etc.), but ultimately habitat rehabilitation projects need to demonstrate meaningful connections to the viability of targeted salmonid populations. What proportional contribution to new spawning habitat is expected from 50,000 yd³ of gravel, if that could be achieved? How many redds can that area support? Similarly, are small side channel projects at an adequate scale to produce a biological response, or are landscape-scale projects needed to provide adequate habitat for protecting fish during dry and/or wet years? Will predators consume most or all of the expected increased production of salmonids from the floodplain and gravel projects?

Finally, SOG requested the IRP to comment on the approach they introduced to update water year classifications for the New Melones Index as forecasts become available. The IRP recognizes the management challenge SOG faces in the highly variable hydrologic conditions, with water years transitioning from critically dry to extremely wet within a few months. SOG's attempts at adaptive management are laudable, and the general approach to updating the New Melones Index seems reasonable. It might seem logical to assume that, since the 90% forecasted inflow has the highest likelihood of being exceeded, the 90% exceedance will likely be most protective of fish, particularly in the driest years and for meeting late summer temperature targets. However, lacking data, the impacts of 50% or 90% exceedance criteria on extant salmonid populations remains unclear. In a 2010 report (NOAA 2010), SOG summarized a preliminary analysis on the effects of 50% and 90% exceedances. However, the data were unavailable for the IRP to review and analyses were too vaguely described. It was thus impossible for the IRP to determine if the results are conclusive or logical. A re-analysis that includes data from both drought and flood years would help clarify the biological effects of the 50% and 90% exceedance thresholds on storage for late summer temperatures. A scenario that shifts between 50% and 90% exceedances, based on initial assessments of water year conditions, could be appropriate for conserving water resources needed for later in the water year.

Enhanced Delta Smelt Monitoring (EDSM) Program

An improved method of surveying Delta Smelt in a manner that can produce refined abundance estimates has been greatly needed. The first year's (WY 2017) implementation of EDSM was a positive step in that direction. However, the IRP

identified a number of issues that may present challenges to achieving the program's intended objectives.

In spite of EDSM's substantial increase in sampling effort relative to previous surveys, its catches of Delta Smelt remain quite low, with many zero-catch sampling events. The resulting abundance and distribution estimates are highly uncertain. In considering the challenges associated with monitoring the Delta Smelt population, the "Lessons Learned" and "Concerns" sections of the EDSM report were very helpful to the IRP regarding the following topics:

Sampling design.

The generalized random tessellation stratified (GRTS) design seems an appropriate approach for obtaining unbiased estimates of total Delta Smelt abundance across the entire Delta. GRTS provides randomized site selection, uniformly-dense spatial coverage, and oversample properties needed to eliminate bias. However, practical limitations on sample size and collection methods may prevent this design from adequately representing potential "hot spots" of abundance, particularly in shallower waters, and other microhabitats (e.g., spawning areas) in which Delta Smelt may congregate at certain times. Such "hot spots" may be quite small in terms of area and/or volume relative to the entire Delta while containing much higher Delta Smelt densities at certain times (e.g., see Bennett and Burau 2014). The EDSM's first-year experiments included attempts to sample some shallow habitats, but it may be advantageous to sample such potential hot spots more thoroughly by either adding sampling effort or redistributing the existing effort.

A greater-than-proportional number of sampling locations could be selected in hot spot areas via GRTS, either by defining habitat-based strata (Section 5.1.2, EDSM report) or by using unequal probability sampling. The stratification option would simplify estimation of the abundance model parameters. However, model parameters can also be estimated from unequal-probability data by using Thomas Lumley's "survey" package in R. The "survey" package will also give design-based standard errors, which may partly address the EDSM report's concerns about "wrong" variances (Section 5.2). Also, the neighborhood variance estimator of Stevens and Olsen (2003), assuming it could be applied here, would reduce variance estimates only to the extent that Delta Smelt densities changed slowly and smoothly over space relative to the scale of separation between sampling locations. Given the mobility of Delta Smelt, and the extreme patchiness of actual densities, there may be little value in pursuing neighborhood variance estimation (EDSM Section 5.2).

The current sampling design specifies some strata boundaries that violate the assumption of density of fish varying slowly and smoothly between sampling locations. For example, the Suisun Bay strata contains multiple habitat types (shallow bays and energetic deep channels). Water velocities within the Suisun Bay strata are highly variable and are tidally influenced.

Abundance estimation.

There are several aspects of the abundance estimation that require further development including volume calculations and the fish sampling methods. The zero-inflated negative binomial (ZINB) seems appropriate for modeling the large number of zero-catch samples and the apparent over-dispersion (relative to Poisson) of fish counts in positive-catch samples. This approach is well-supported by the literature (e.g., Wenger and Freeman 2008).

Given the statistical rigor involved in developing the EDSM abundance estimation approach, it was surprising to note how abundance estimates were influenced by the collection of a single fish. In the weekly reports (EDSM, Draft preliminary abundance analysis, Phase 2/Phase 3), there were estimates of zero abundance when no fish were captured, but enormous abundances (hundreds of thousands of fish) were estimated when only one fish was captured. Even though the confidence intervals on the nonzero-catch estimates were also very large, it is still difficult to find credibility in such large differences in the point estimates of abundance. In addition, the EDSM report also noted wide swings in sequential estimates of occurrence probability (π_0) and unrealistic changes over time in the total abundance estimates. These unstable, very spiky estimation results are likely caused by a combination of factors including: many zero-catch samples, very low counts when fish are caught, and the very large expansion factor of the ratio of the total water volume to the volume sampled by the tows.

The EDSM team's proposal to address these estimation problems by aggregating the tow data over space and time seems reasonable. The approach should reduce the number of zero-catch cases and increase the cumulative counts when fish are caught (EDSM, Section 5.1.1). Exploring such aggregated estimates would help to better understand how estimation uncertainty decreases with increasing degrees of aggregation.

The IRP cannot recommend pursuing the more complex alternative models mentioned in EDSM Section 5.1.1 at this time. Such models would have even more parameters,

thus leading to greater estimation difficulties and greater estimation uncertainty. Instead, it may be more useful to evaluate the robustness of the current estimates by comparing them to estimates from alternative, credible models having complexity similar to the ZINB. For example, although the zero-inflated Poisson had an inferior fit quality for the available data, it was also not ruled out by the data. Its estimates would be interesting to compare with the ZINB. Another option is to specify the ZINB as a conditional model rather than a mixture model, to see how this option affects estimates (Cunningham and Lindenmayer 2005). Finally, repeated tows at the same or nearby locations could be treated as replicates, with zero catches regarded as non-detections of a rare, but present, species rather than as true absences (McKenzie et al. 2005). If abundance estimates from these different approaches are similar, then one would have more confidence in the robustness of the ZINB estimates.

Volume calculations.

A high priority should be assigned to reducing uncertainties related to the volume sampled during multiple tows (EDSM Section 5.3) and the mismatch between sampled volumes and the volumes extrapolated over (EDSM Section 5.4). The sample volume and the extrapolated-over volume are both direct multipliers for calculating abundance, so their errors would have a substantial impact on the final estimates. In moving forward with the EDSM it is important to explore and increase the robustness of the current abundance estimation method.

Perhaps fish densities expressed as surface area rather than volume would help reduce variation associated with multipliers based on volume. It is already assumed that the Delta Smelt population is restricted to the top 4 meters of the water column, which is the only depth stratum sampled (i.e., the top 0-4 meters of waters > 2 m depth) in the EDSM. Using a two-dimensional surface area as an expression of density (fish m²) versus three-dimensional volume (fish m³) reduces the multiplier effect of volume. Density based on surface area may allow for direct comparison of densities in mid-channel stations with those in shallow water using different gear types. For example, if a mid-channel tow filtered a volume of 3000 m³ including a depth of 4 m, the surface area of the tow would be 750 m² (3000 m³ / 4 m). Assuming use of a smaller gear type that was 1/10 the size in shallow water (e.g., 1 m depth) and that filtered 75 m³ per tow, it would have collected from a surface area of 75 m² (75 m³ / 1 m). Assuming that 10 fish were captured in the larger mid-channel gear and 1 fish was captured in the shallow water, the density in terms of surface water area would be the same (13.3 fish/1000 m²) in both the mid-channel and shallow stations. However, expressing density in terms of

volume yields a much lower density (3.3 fish/1000 m³) in the mid-channel than in shallow water (13.3 fish/1000 m³).

The bathymetry of the Delta and the connection between open water habitats and the adjacent channels also are important to consider. For instance, in the south Delta around Mildred Island, there is large open region separated from adjacent channels by levees. Lopez et al. 2006 showed through field sampling studies of primary production in this region that the connectivity and transport between Delta habitats, controlled by bathymetry and levee breaks, is important for defining habitat quality throughout the Delta. Therefore, the abundance of fish sampled in a channel cannot directly be extrapolated to an abundance within the open water region.

Fish sampling methodology.

There are a number of other methodological considerations that may contribute to the uncertainties in the abundance estimates as well. These include efficiency of the collecting gear, the effect of the stopping rules, and variation in efficiency of sampling crews. In addition, interacting behavioral and hydrologic considerations may contribute to uncertainties. These would include tidal surfing behavior of Delta Smelt, particularly during upstream spawning migrations (Bennett and Burau 2015), and the water sources that are actually being sampled in each stratum (e.g., Sacramento and San Joaquin sourced water are combined in some strata but differ in water quality attributes). The complex hydrodynamics of the Delta may result in sampling water originating from multiple sources within a given stratum.

The EDSM assumes that the Kodiak trawl is 100% efficient at collecting adult and juvenile Delta Smelt. However, no data were presented to support this assumption. Trawls are notoriously inefficient because of the way they function, essentially herding fish in front of them until the fish tire and fall back into the cod end of the net. In addition, there is usually considerable escapement due to net avoidance involved in trawling. Trawls might be better characterized as collecting gear than sampling devices. When multiple gear types are compared in the same area, one type may consistently capture more fish but this is simply a relative measure of effectiveness. Rarely are trawl hauls compared to known densities of fish in an area, but when acoustic data have been used in conjunction with trawls, trawl efficiencies are substantially lower than 100% (e.g., Hylan et al. 1995).

In order to tire fish herded in front of a trawl, the net must be towed at a speed that is close to, or greater than, the critical swimming capacity of the species of interest.

According to Swanson et al. (1998), Delta Smelt exhibit swimming performance that is comparable to other species of the same size and are capable of sustaining moderately high velocities averaging 27.6 cm sec^{-1} . This is equivalent to traveling a distance of over 165 m during a standard 10-minute tow. Swanson et al. (1998) also found that endurance was highly variable and not normally distributed, so a subset of the Delta Smelt population may be more or less susceptible to capture at trawl tow speeds approaching the maximum sustainable swimming speed of the smelt. This also suggests that the location of fish along a tow path may contribute to variation in catch. The farther along the tow path fish are first encountered, the less likely they are to be captured. This concept is illustrated in Figure 1.

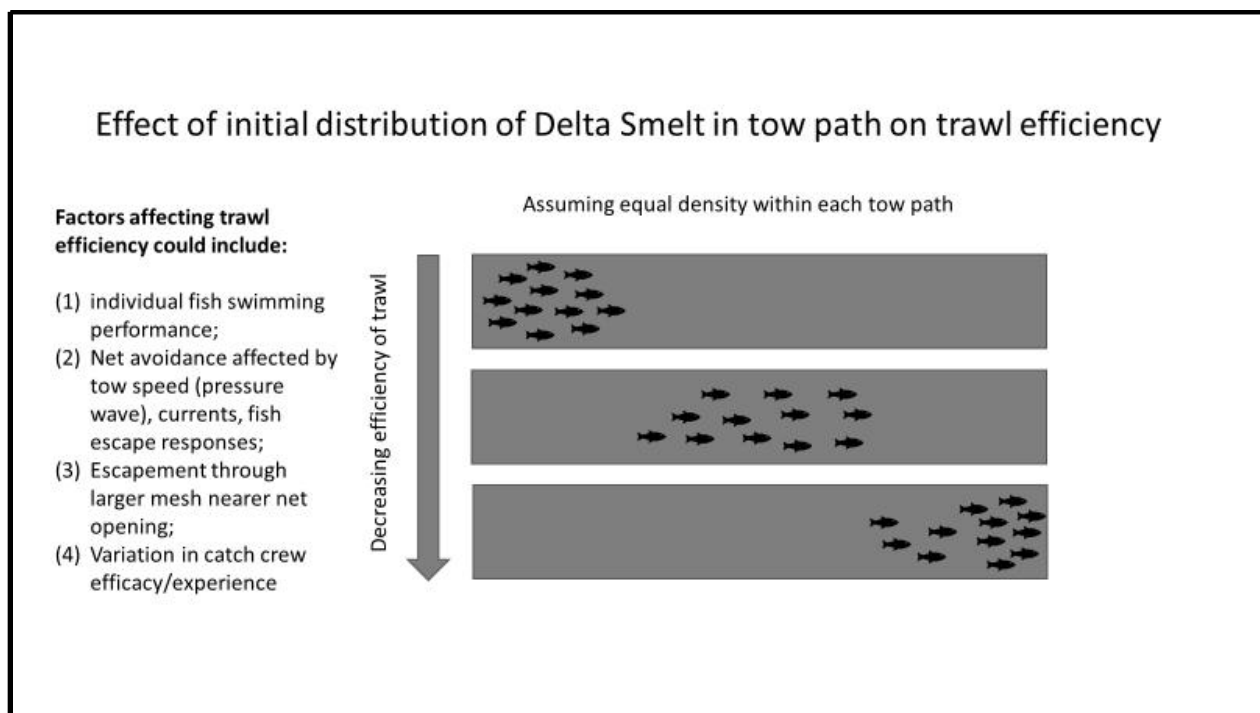


Figure 1. Illustration of the potential effect of initial fish location along hypothetical tow paths on likelihood of capture.

The stopping rules associated with the collection of adult and juvenile Delta Smelt, together with the patchy distribution and movement of fish within a sampling station, may also contribute significantly to the error and uncertainty associated with abundance estimates. It would be unusual to know the actual density of Delta Smelt at any given station and time, but Figure 2 illustrates a hypothetical situation in which a wide range of density estimates could be achieved at a station where actual densities are $3.5 \text{ fish}/1000 \text{ m}^3$. For simplicity, this example uses a maximum of only three possible tow paths. This example uses the reasonable assumption that fish are not distributed

evenly within the station. If the first tow happens to be Tow A, sampling ceases under the stopping rule and an abundance estimate that is only one tenth of the actual density is obtained. If the first tow is Tow C, the “reduce zero rule” requires sampling to continue and the abundance estimate is dependent on whether Tow A or Tow B is next. If Tow B, then an overestimate of actual density results, but if Tow A follows, density is underestimated by more than an order of magnitude. If Tow B happened to be the first at this station, the “protect fish rule” would be in effect, sampling would cease, and density would be overestimated by



Perhaps the EDSM team should consider performing some synthetic sampling experiments, based on current abundance estimates, to study whether the increased take from relaxed stopping rules might significantly reduce estimation uncertainty and yet have negligible impact on total abundance.

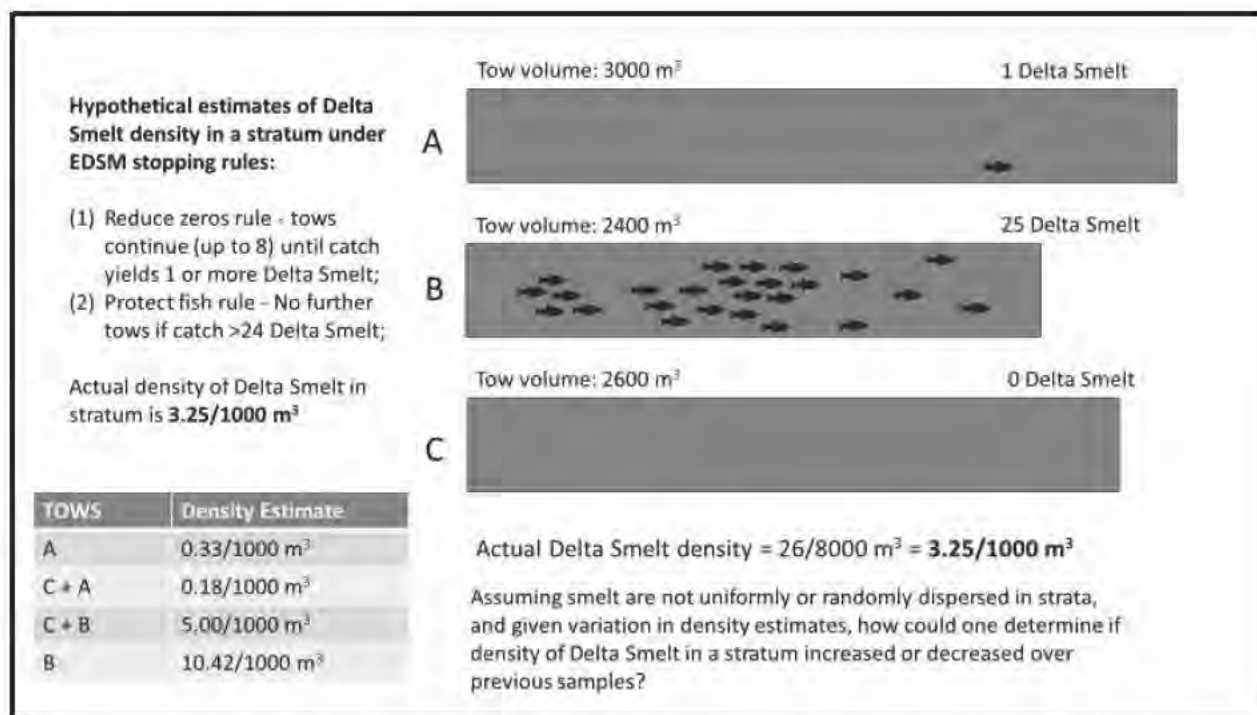


Figure 2. An example of the range of abundance estimates from a station at which only 1-3 trawl tows are conducted under the “stopping rules” used to reduce zeros and protect fish when actual Delta Smelt density is $3.25 \text{ fish}/1000 \text{ m}^3$.

The stopping rules cannot be applied to the larval Delta Smelt samples, and given that completely separate gear types with different unknown efficiencies are required to collect different life stages, it is currently unclear how the abundance estimates of larvae can be related to those of juveniles and adults.

There are potentially important sites within the designated sampling strata that are not being sampled for Delta Smelt because they are too shallow or contain too much organic material to be effectively sampled with trawls. For example, there are large shallow areas including Frank's Tract (2 m deep), Dutch Slough (2 m deep), Mildred Island (2.5 m deep) and the interior of Liberty Island (variable depth under 3 m). These areas account for large volumes and surface areas in the Delta. There are also important hydrodynamics that may influence the actual source of fish collected in different sampling strata. Table 2 includes some additional comments about each of the regions (strata).

Table 2. Notes on selection of Delta Smelt sampling strata in the Delta.

Region (Stratum)	Sampling considerations	References
Lower Sacramento ^a	Threemile Slough is a complex and critical junction with difficult hydrodynamics. This makes interpreting the significance of field sampling in this region difficult.	Monsen (2001)
Liberty Island/Cache Slough	Both exterior channels and interior of Liberty Island should be sampled. The BREACH I/II/III studies provide extensive scientific background for this region that could guide sampling.	BREACH III Studies. Lead Administrative PI: Charles Simenstad (University of Washington)
Sacramento Deep Water Ship Channel	The channel is approximately 10 m deep with no shallow water habitat. The channel supports ship traffic to the Port of Sacramento.	
Upper Sacramento	Always note whether the Delta Cross Channel is open or closed during sampling.	Gleichen et al. 2015; Monsen et al. 2007

Region (Stratum)	Sampling considerations	References
Lower San Joaquin ^b	Sampling Dutch Slough is an important open water region in this stratum. Threemile Slough water exchange could also influence source water in this region.	
South Delta	Mildred Island is deep enough to sample. Frank's Tract is shallower. These two flooded islands have very different biological characteristics even though they are both South Delta open water habitats.	Lucas et al. 2002; Lopez et al. 2006
Suisun Bay	Always separate out Montezuma Slough/Suisun Marsh regions from the main Suisun Bay. These two regions have very different hydrodynamic characteristics.	
Suisun Bay: Montezuma Slough and Suisun Marsh	Observe what phase of tide at the time of the tow. Also note anything like observations of draining of the marsh areas into the channel.	
Suisun Bay: Main Suisun Bay	Sample in the open water habitats of both Grizzly Bay and Honker Bay. Tides are very energetic in this region.	
Mokelumne River/East Side Streams (North of the San Joaquin River;t East of the Delta Cross Channel)	This region should not be included with South Delta statistics. Always note in fieldwork whether Delta Cross Channel is open or closed as the connection to the Sacramento river drives water transport in Georgiana Slough and the Mokelumne channels.	Glechauf et al. 2015

^aLower Sacramento: Recognize that sampling in Threemile Slough represents San Joaquin sourced water half the time. Flow direction (Sacramento → San Joaquin or San Joaquin → Sacramento) is especially important to document in this channel. In Threemile Slough, the direction of the current is often

different than the “flood” or “ebb” tide in the adjoining Sacramento and San Joaquin channels due to bathymetry and the connection between the two major rivers (Monsen 2001).

^bLower San Joaquin: This is reasonable sampling. Sampling in the open water region called Dutch Slough is important. Also note that anything near Threemile Slough could be a Sacramento source water. It is very important to note times, direction of flow in Three Mile Slough (Sac → SJR or SJR → SAC) and if it is ebb or flood on the San Joaquin river.

Results from the Old and Middle Rivers (OMR) Index Demonstration Project

Pumping at the State and Federal Projects (Projects) are generally constrained by the D-1641 Bay-Delta Standards by Delta outflow and export-to-inflow ratio (E:I) (DWR 2017), both of which are calculated by the DWR DAYFLOW program (<http://www.water.ca.gov/dayflow/output/>). However, neither Delta outflow nor the E:I ratio communicate flow conditions in the South Delta region. Therefore, during fish protection season, export facility operations must also incorporate flow restrictions based on a measured Old and Middle River (OMR) flow as outlined in the BiOps (DWR 2017).

While the charge questions asked the IRP to comment on the differences between the two methods to calculate “actual” OMR, a more relevant question is “How accurately does the Index Method predict the USGS Gage estimates when OMR regulations are controlling South Delta pumping rates?”

Furthermore, the questions posed to the IRP on this topic seem to imply that the OMR Index and the USGS Gage Data Method were separate methodologies being equally evaluated for their success in representing “actual” OMR flow. In reality, the OMR Index values are being evaluated for their ability to accurately predict the USGS Gage Data Method.

Use of the term “actual” OMR flow is misleading in the context of this demonstration project. “OMR flow” is a measure of direction and intensity of the flow at a tidally-averaged timescale incorporating both flows on Old River and Middle River north of the State and Federal export facilities. Although the California Data Exchange Center (cdec.water.ca.gov) has a station labeled OMR, the timeseries reported is the sum of the tidally-filtered flow measurements at the USGS stations on Old River (station OBI) and Middle River (station MDM). The “OMR “flow” was developed to communicate how strongly pumping at the State and Federal export facilities are influencing hydrodynamics in the South Delta region.

The hydrodynamics in the South Delta are tidal, with two floods and two ebbs daily. The magnitude of the tidally-averaged flow is approximately 10% of the maximum flow in either direction. It is not correct to interpret this region as a river system that is traveling northward towards the mainstem San Joaquin. Nor is it correct to assume that when the tidally-averaged flow is negative, that Old and Middle rivers are flowing “upstream” to the south towards the pumps. On a tidally averaged timescale, the residual flow is to the south, but in a Lagrangian framework, any “particle,” whether it is a drifting log, a plastic ball, or a larval/juvenile fish, may travel with the current many river miles up and downstream over a tidal cycle. To add to the complexity, the flows in the South Delta are also influenced by: 1) the filling and draining of the Delta, depending on the phase within the spring-neap tidal cycle, 2) atmospheric conditions, 3) the configuration of various temporary barriers in the channels during portions of the year, 4) the operation of the radial gates at the entrance of Clifton Court Forebay, and 5) the export rate at both the State and Federal pumping facilities.

According to the RPA action, the USGS Gage Data Method should be considered the “gold standard” definition of OMR. The critical time period of interest is during negative OMR flows, especially when the calculated OMR tidally averaged flow is between -2500 and -5000 cfs.

The OMR Index approach is being proposed as an alternative calculation method because the water operators have found that the USGS Gage Data Method specified in the RPA is difficult to use in actual operations. Table 3 compares the advantages and disadvantages of both approaches.

The correlation between the OMR Index and USGS Gage Data Method is an inadequate and inaccurate measure of how well the OMR Index predicts the values produced by the Gage Data Method. This is because any two variables with the same units can be perfectly correlated ($r^2=1$) and yet have major numeric differences. This will occur any time the two variables have an exact linear relationship with an intercept different from 0 and/or a slope different from 1.

The most accurate way to judge agreement between the two indices is to calculate the daily (or time-averaged) differences between them, (USGS Gage Data Method – OMR Index), and then analyze the patterns and statistics of those differences. Under which conditions do the two measures have the greatest residuals? What are the implications of those differences for fish and Project operations? These differences are the errors in

Table 3. Comparison of OMR Index Method (preferred by Reclamation) and USGS Gage Data Method (specified in RPA action).

ADVANTAGES	DISADVANTAGES
OMR Index Method	
<ul style="list-style-type: none"> • Vernalis flow at San Joaquin mainstem station is always unidirectional; tidal filtering unnecessary. • Easy to extrapolate flow data when data gaps occur. • No operational lag time for averaging required. 	<ul style="list-style-type: none"> • Empirical relationship that includes, among other things, a very inaccurate estimate of in-Delta diversions and returns (DICU). • Lack of analysis and understanding on the uncertainties and errors in the Index and their impacts on fish or operations.
USGS Gage Data Method	
<ul style="list-style-type: none"> • Data based on real-time monitoring in the tidal portion of the system. • Incorporates effects of tides, filling and draining of the Delta, and storm surges. 	<ul style="list-style-type: none"> • Less practical to use because of a 3-day delay to calculate the value due to tidal filtering requirements. • Missing data because of issues with reliability of gages.¹ • Method is still an index that involves combining information from stations in two different South Delta channels.

¹Statements by Contra Costa Water District during the public comment period indicated that USGS has made these high priority stations since index started being used in management; data gaps are less frequent than in the past.

predictions of USGS Gage Data Method values by the OMR Index. Statistical descriptions of these differences, such as those in Table 6 of the OMR Demonstration Project report, should be the primary basis for assessing the accuracy of the OMR Index predictions.

Prediction accuracy is also difficult to assess graphically from overlaid time series data from the two methods, such as in Charts 1-21 of the OMR report. Numerically significant errors will tend to appear small in these overlaid time series, relative to the full range of variation in each variable. A clearer picture of the changing error magnitudes over time would emerge from a plot of the errors (USGS Gage Data Method - OMR Index) as a time series. The errors can also be plotted on the y-axis against other variables (e.g.,

USGS Gage Data Method values) on the x-axis, to better understand the sources of error.

Table 6 and scatterplots such as Chart 27 in the OMR report clearly show that there are systematic shifts in the prediction errors over time. In addition, Table 6 (OMR report) shows mean errors greater than 100 cfs, and up to nearly 500 cfs in some years, with maximum and minimum errors often exceeding 1000 cfs. Apparently, DWR has concluded that differences of these magnitudes are acceptable for the purpose of satisfying RPA action criteria for OMR flows, though no justification for this conclusion was provided. However, the IRP considers that differences of this size are of concern, especially in the context of the critical OMR range from -2500 to -5000 cfs, and encourages a more comprehensive and accurate assessment of the prediction errors and their possible sources. This assessment should include an ecologically and/or operational based threshold for error to establish that the OMR Index is adequately reproducing the USGS Gage Data.

Once differences between the two OMR methods are identified for critical periods, it would be beneficial to identify the sources of these differences. For instance, the OMR Index Method is a series of regression equations that are based on the configuration of the temporary barriers. Some of the differences could be related to inaccuracy of representing the temporary barrier configuration. There are periods of construction/deconstruction of these barriers when they are not fully operational. Alternatively, there may be regressions for certain barrier configurations that need to be improved.

It may also be possible to improve the OMR Index and reduce its prediction errors using other mathematical approaches. The IRP understands the DWR's reluctance to add complexity to the current OMR Index in the form of additional covariates. Such additions would require DWR to maintain a more complex model and to acquire and manage additional sources of model input data in real time. As an alternative, the IRP suggests an improved prediction algorithm that employs only the current value of the OMR Index and values from the USGS gages from prior days. Appendix 2 (current LOBO report) gives a full description of the proposed improved prediction model.

Draft Proposed Shasta RPA Amendment

Progress continues toward a better understanding of temperature variability in the Sacramento River and its potential consequences for juvenile Winter-run Chinook

salmon. Model development based upon Martin et al. (2017), and research results thus far presented, hold considerable potential for resolving important links between the physico-chemical environment (e.g., temperature and oxygen levels) experienced by the earliest life stages of salmonids and their survival in the Sacramento River. The analysis and the integration of biophysical factors considered in the model, as well as its broad application under variable annual and interannual thermal conditions, should provide valuable guidance for temperature management targeting spawning habitat in the Sacramento River.

Application of the temperature-dependent egg mortality model and critical temperature threshold.

The Martin et al. (2017) model predicting temperature-dependent egg mortality is a parsimonious and realistic representation of temperature effects on eggs. Martin et al. (2017) found that the model gave poor predictions of observed field mortality, when its parameters were estimated from a relevant but restricted set laboratory data for egg thermal tolerances. Thus, they instead estimated model parameters from 18 years of observed field survival rates, in order to project the survival rates expected under future flow scenarios.

Despite its strengths, the IRP expects that model predictions of survival will have sizable uncertainty, resulting in wide confidence intervals (CIs) that may complicate managing for temperature-based mortality. The quality of fit of the field-parameterized model is illustrated by Figure 3 of Enclosure 3 of the draft Shasta RPA amendment. There is noticeable scatter in the relationship between observed and model-predicted survival. In addition, the sample size for fitting the model ($n=18$) is only marginally sufficient to estimate the two model parameters, T_{crit} and b . Such CIs were reportedly communicated to the flow management planners, along with the model's point predictions of egg survival. However, it was unclear if, and how, the uncertainty (CIs) for model-predicted survival - in addition to its point estimate - were being considered when planning for future flows.

Martin et al. (2017) propose a model of within-redd oxygen deprivation with the objective of explaining the marked discrepancy between field-measured egg survival rates and the rates predicted by the lab-parameterized mortality model. Although the oxygen deprivation is a likely hypothesis to explain this discrepancy between field observations and the model, further research is needed to eliminate other possible explanations. For example, it is possible that the assumption-laden and indirect estimates of field survival are biased. Another possibility is that temperatures within the redds are higher than the water-column temperatures predicted by the RAFT model.

This might occur due to direct radiant heating of redd gravel, coupled with greatly-reduced water movement within the gravel. Concern was expressed during public comment (J. Anderson) that the simplifying assumptions of the egg mortality model may overpredict mortality for a given seasonal temperature pattern, a point that is considered in the specific responses to charge questions below.

7-day average of the daily maximum temperatures (7DADM) vs. daily average temperature (DAT).

Managers expect that water operations could be more difficult under 7DADM due to the time lag inherent in its 7-day average. For example, daily water temperatures could have already turned to an upward trend, even as 7DADM is still falling, due to lag effects. Thus, water operations based on 7DADM compliance would require some forecasting. On the other hand, real-time operations based on DAT already have built-in lags of a few days because dam releases and downstream temperatures do not respond immediately to flow-change decisions. As a result, operations that try to maintain DAT compliance also require some forecasting.

Unless a workable management strategy under 7DADM can be achieved, the presumed biological advantages of 7DADM may not be realized. If DAT is retained as the compliance and operating metric, it is still useful to track 7DADM as an indicator of possible chronic effects on salmonid populations. As discussed more extensively below, a linearly weighted 7DADM would better represent the temperature variations in the channel on a weekly timescale for this system.

The IRP was unable to fully evaluate the tradeoffs of the two temperature criteria without further analysis. One primary concern was the need to demonstrate the ecological relevance and presumed biological benefits of considering the 7DADM over the DAT. Both the physiological costs to fish of having incomplete (lagged) temperature information as peaks or troughs occur in the system, as well as the actual likelihood of exposure to those temperatures that exceed a critical limit over a shorter period of time under the 7DADM, should be investigated. Such an analysis should overlap discussion on moving the temperature compliance point. Furthermore, questions remain about the impacts of the two temperature criteria on water supply, which directly affect the operational feasibility of the criteria. Would transitioning to 7DADM require more cold water, and at what times of year? Would that water be available during an average or dry year?

IRP RESPONSES TO SPECIFIC QUESTIONS FOR THE 2017 LOBO ANNUAL REVIEW

Responses of 2017 IRP to questions regarding Stanislaus River Watershed/Eastside Division RPA actions in WYs 2011-2017

- 1) How well did the Stanislaus Operations Group (SOG) incorporate various considerations in its advice on the timing and shaping of the minimum required flow volumes for the fall pulse flow, the winter instability flows, and the spring pulse flow? What other factors (if any) should SOG include in its advice?**

Extensive monitoring is being conducted in the Stanislaus, and the integration of the field data (e.g., weir counts, water and air temperatures) with weather forecasts works to focus SOG operational recommendations on the timing and duration of pulse flows. The shaping of pulse flows seems to be based on logical current assumptions of salmonid responses to natural flow variability. For example, the transition to a three-peak pulse in October (prior to peak spawning) is intended to attract spawners while discouraging the construction of redds at streambed levels that will be dewatered later in the year. However, this qualitative logic model linking salmonid behavior to the design of flow pulses suffers from a lack of quantitative analysis to test the assumption that salmonids are responding to the pulse flows.

The primary objective of the fall pulse flows is to trigger migration up into the Stanislaus when operators are drawing down the reservoir. However, the data presented leads to some speculation about whether fall attraction flows, as currently practiced, stimulate or delay upstream migration or have an influence on encouraging straying of individuals into the basin. While it is clear that the SOG's intention in designing the fall pulses is to avoid dewatering of redds during winter base flows, it is unclear that one shape of pulse flow is better than another in actually triggering migration in the river. There is an understandable reluctance to experiment with the shape of pulses for fear of having unintended negative impacts on salmonids, but lacking objective data there is no way of knowing that current choices are any better or worse than alternatives.

A more refined justification for effects of the timing and shape of flows on salmonid migration (e.g., Sykes et al. 2009) could be developed and/or tested experimentally. Similarly, field observations could be examined to investigate the effectiveness of spring pulses in achieving their intended outcomes of reducing temperatures, inundating shallow habitats, and flushing smolts out of river and through the Delta. Such an analysis would be useful both for objectively shaping pulses and for prioritizing future locations of floodplain rehabilitation projects.

2) Given the constraints in managing water temperatures in the Stanislaus River basin, how well did the SOG structure its approach and incorporate current science into temperature management?

There are a number of important constraints on the effective management of temperature in the Stanislaus. One key constraint is the existing infrastructure. For example, New Melones Dam has limited temperature control capability due to low-level outlets that can only be used when reservoir depths are below 808 feet. The existence of the submerged relict structure of the original Melones Dam impedes the flow of cold water to the low-level outlets in New Melones. Furthermore, releases from New Melones flow into private reservoirs that limit the effectiveness of upstream temperature operations. Downriver, outlets at Tulloch Dam draw the coolest water available, but conflicting contract obligations constrain the availability of water from Goodwin Dam. As a result, temperature criteria for steelhead are often exceeded, in some cases for extended periods. If meeting temperature criteria is indeed a requirement of the RPA action, the SOG should consider how current infrastructure may be modified to provide the cold water needed to meet the criteria. The addition of a more flexible temperature control system at New Melones would likely be beneficial for meeting temperature targets with the least amount of water, though the capital costs are high and the infrastructure may be impractical to install or operate. If climate predictions over the next century are correct and snowmelt accounts for proportionally less of the water inflow to the Stanislaus, infrastructure improvements that allow better temperature control may become increasingly important to maintain temperature conditions to support viable populations of salmonids.

From a biological perspective, temperature criteria were established in the Stanislaus to benefit steelhead. However, the steelhead population in the Stanislaus may be too small to effectively evaluate the consequences of exceeding current temperature criteria. Furthermore, it is not clear if the current temperature criteria are protective of the remaining fall-run Chinook in the system. Although fall-run Chinook are not targeted by RPA actions, a summary of available data indicates that temperature requirements for Chinook and steelhead differ (Carter 2005) and managing temperature for one may have unintended negative consequences for the other.

3) During extremely wet (i.e., water years 2011 and 2017) and extremely dry (i.e., water years 2012-2016) hydrologic conditions, SOG faced challenges in managing flows, reservoir storage, and temperature. How well was scientific information considered in the SOG's decision-making process under these extreme hydrologic conditions?

The wide range of hydrologic conditions over the past seven years demonstrate the complex challenges of meeting targets for discharge and temperature under both wet and dry water years. The result is desired outcomes for people and ecosystems are decreasingly met in these extreme conditions. In WY2017, fall pulse flows were managed to prioritize flood risk reduction, with fish managers relying on luck to prevent redds established during elevated flows to remain inundated through fry emergence.

Unfortunately, forecasts of climate change indicate that normal water years are decreasingly likely to occur and that extreme conditions are likely to become more common. While California has been subject to extreme hydrologic conditions through its geologic history, the current hydrosystem, including the reservoirs, diversions, and relocated spawning habitats, are novel. Thus, while historical data can provide a guide for how fish might respond to extreme events in a natural river system, it provides limited insight into how best to protect fish in a highly manipulated system. Furthermore, the IRP was unable to find a focused attempt to summarize how experiences of the operators or the fish were synthesized in any way. Thus, it was unclear how well scientific information was integrated into the decision-making process during these past extreme events. These questions and issues are not unique to the Stanislaus River, and there are not currently any universally acceptable approaches to recovering species subject to hydrologic extremes. However, some key concepts can be applied in the future as a general framework for thinking about managing extreme events in modified systems. These concepts emphasize robustness (Herman et al. 2015), a condition where the species' sensitivity to the disturbances is reduced, and resiliency, where species are able to recover following a disturbance due to diversity of habitats and population life strategies (Walker et al. 2004).

First, a synthesis of lessons learned would be an important exercise for operators and managers. Such a synthesis should summarize the hydrologic year at a weekly to monthly time scale, outline operational decisions in response to data and associated releases, examine measures of how operations and extreme conditions impacted fish, and identify what additional information and/or alternative actions would be needed in a future event.

Second, there is a growing body of literature on managing novel ecosystems that is relevant to the Stanislaus. Even absent the effects of extreme conditions, the relocation of habitats downstream of the dams to formerly unsuitable locations, the loss of key species (e.g., Spring-run Chinook), and the introduction of invasive predators has already sufficiently modified the ecosystem structure and function to classify the Stanislaus as a novel ecosystem. The literature (Hobbs et al. 2006) argues to examining the persistence and value of the new ecosystem, and for managing these

types of system in a way that is fundamentally different from current approaches. For example, Seastedt et al. (2008) suggest that, rather than attempting to recreate historical conditions and species compositions, management should emphasize maintaining genetic and species diversity, as well as the biogeochemistry that favor the desirable species. If the system is stable, what are the costs and risks of attempting to guide the system to a more desirable state? If the system is changing, what are the costs and benefits of maintaining current species compositions? Identifying where sites fall along a range of wild to intensively-modified will help managers prioritize conservation of the least impacted systems and identify for which systems maintaining or restoring historical species levels and compositions is not feasible.

The increasing frequency of extreme events raises the need to revisit the guiding vision for the basin. In more natural river systems subject to extreme events, critical refuges from droughts and floods are provided by side channels, floodplain habitats, deep pools, and other complex habitats that are largely missing from the current Stanislaus River. Thus, managers may need to reconsider what outcomes for the basin are feasible. Gravel augmentation and other habitat enhancements are likely to become increasingly important for species to survive extreme events, but there is currently no evidence that the agencies will be able to create enough of these habitats to produce a measurable benefit. The RPA action requiring the addition of 50,000 yd³ of gravel by 2014, and 8,000 yd³ annually thereafter, has been stalled by lack of funding, land access, and other issues. Other RPA actions lack measurable, time bound objectives (e.g., floodplain restoration and predation management) that link to biologically-relevant outcomes. While effects of RPA actions can be measured in a variety of ways (e.g., primary and secondary production, diversity, etc.), some evidence that the habitat projects meaningfully lead to recovery is needed. What area of new habitat is expected from 50,000 yd³ of gravel, if that could be achieved? How many fish can that area support? Similarly, are small side channel projects at an adequate scale to produce a biological response, or are landscape-scale projects needed to provide adequate habitat for protecting fish during dry and/or wet years? Will predation mitigate much of the increased production in salmonids from the floodplain and gravel projects?

Responses of 2017 IRP to questions regarding the Enhanced Delta Smelt Monitoring (EDSM) Program

- 4) How well is the EDSM program designed and carried out to provide usable results to inform the implementation of the 2008 Fish and Wildlife Service Biological Opinion?**

USFWS should proceed as rapidly as possible to evaluate whether EDSM can accomplish key objectives, especially the entrainment estimation goal. Because the current EDSM field program requires substantial money, material and person-hours, its continuance at the current level of effort may depend upon demonstrating promise for meeting as many of these objectives as possible. This was the first year of field sampling for the EDSM and the program continues to change (e.g., beginning with one sampling crew and expanding to three). This question might best be addressed after the sampling and abundance estimation approaches stabilize.

5) How complete are the EDSM methods for providing improved understanding of abundance and/or distribution of Delta Smelt? What modifications could be considered to further improve understanding?

Several issues that present challenges to improving the understanding of both abundance and distribution of Delta Smelt in the Delta are discussed in the IRP's general consideration of the EDSM program in this report – see “Enhanced Delta Smelt Monitoring (EDSM) Program.” The section includes a discussion on limitations of currently used sampling gear, sampling volume calculations, inability to adequately sample shallow waters, potential “hot spots” of abundance, effects of tidal stage on the distribution of Delta Smelt within and between sampling strata, and the potential effect of stopping rules on estimates of abundance.

As is acknowledged in the EDSM report (Section 5.1), it remains unclear if EDSM can fulfill its seven stated objectives (Section 2 of the EDSM report) to inform the BiOps and water operations, particularly with regard to entrainment losses at the pumping facilities. In 2017, emphasis was on progress towards Objectives one (abundance estimation on a weekly time scale), two (spatial distribution), and five (comparison to existing surveys). The IRP encourages USFWS to push forward as rapidly as possible to evaluate if EDSM can also fulfil the other four objectives, especially the entrainment estimation goal. A reliable estimate of population size is also essential for determining a jeopardy level and allowable take.

Responses of 2017 IRP to questions regarding results of the Old and Middle Rivers (OMR) Index demonstration project

6) How adequate are the two different OMR estimation methods (i.e., the OMR index equation method vs. the gage data method) for estimating actual OMR flows?

The evaluation of the two methods is inadequate. According to the 2009 RPA with 2011 requirements, and to most reliably represent hydrodynamics of the Delta, the USGS Gage Data Method should be considered the “gold standard” definition of OMR. The critical conditions of interest are negative OMR flows, especially when the calculated OMR tidally averaged flow is in the range -2500 to -5000 cfs. The OMR Index Method should be compared to the USGS Gage Data Method under these critical operating conditions to evaluate how well it represents the USGS Gage Data Method calculation.

7) How complete is the evaluation of the two methods, including their effects on Central Valley Project/State Water Project operations in the Delta?

The report provided a general evaluation, but did not focus on specific critical flow conditions such as those specified in the RPA action (-2500 cfs to -5000 cfs). The analysis should not only examine when the two indexes do not match, but also the underlying mechanisms causing the discrepancy. The OMR Index is a series of regression equations based on the configuration of the temporary barriers. It is important to evaluate the agreement of the model for all possible barrier configurations. Detailed critique of the evaluation, and recommendations for improvement, are provided in the general text on OMR flows above and in Appendix 2.

8) When OMR index values differ from the gage-based OMR measurement, how well are these differences evaluated and understood?

There was no apparent attempt to understand the reasons for the differences between the gage-based measurement and the index values. The OMR report briefly mentions that wetter years have smaller differences, but the explanation was unclear. The USGS Gage Data Method should be viewed as the “gold standard” to be attained, even though errors and omissions can occur with field sampling at the Old and Middle River flow stations due to equipment malfunctions. The OMR Index equations should be frequently reviewed and improved over time. It is very likely that there are certain barrier configurations where the OMR Index equation could be improved. There are statistical approaches that would improve Index-based predictions of the USGS Gage Data values (see Appendix 2 of this report). Greater effort directed toward understanding the prediction errors of the OMR Index, so that it can be applied more knowledgeably, is strongly encouraged. If such understanding is not obtained and applied, then an algorithm such as Appendix 2 would be the only pathway to improved predictions of gage-based measurements.

Responses of 2017 IRP to questions regarding the draft proposed Shasta RPA amendment

Temperature-dependent egg mortality model and critical temperature threshold.

- 9) How appropriate is the application of the temperature-dependent egg mortality model (including temporal and spatial scales; Martin et al. 2017) to understand early life history temperature-dependent mortality of Winter-run Chinook salmon and temperature management planning?**

In general, the application of the temperature-dependent egg mortality is a productive step forward in understanding one critical aspect of potential temperature-related mortality. In combining CE-QUAL-W2 modeling in the reservoir, the RAFT modeling in the river, and an understanding of conditions in the redds that may create survival problems for embryos and alevins, this approach represents a powerful predictive model for salmon vulnerability to temperature exposure. Two major concerns in its application are:

- The predictions of the oxygen diffusion model should be tested under field conditions because of the model's apparent sensitivity to extremely small changes in flow velocity. Eggs within a redd likely experience flow conditions that are spatially variable and temporally dynamic. The idea that a difference of <0.1 cm/sec (Martin et al. 2017) drives a 3-degree shift in critical temperatures would be strengthened by some empirical support for *in situ* redd conditions as well as oxygen depletion envelopes.
- The model depends on estimating background mortality that is additive with the temperature model. However, it may be problematic to apply such a density dependent model that lacks any mechanistic basis or site-specific information (see Assumptions, Q. 10).

Although a relatively minor concern, the comparison of temperature-dependent conditions in artificial and natural redds, using velocity as the hydraulic component of concern could have been enhanced by comparisons with other complex hydraulics which are known to create conditions that aerate redds. Gore et al. (2008) offer a compendium of hydraulic conditions that affect the physiology of aquatic organisms.

10) Is additional information needed to support the temperature-dependent egg mortality model assumptions, parameter estimates, and conclusions for Winter-run Chinook salmon?

The integration of biophysical factors that have been considered in the model, as well as its broad application under variable annual and interannual thermal conditions, is encouraging and represents a positive step toward quantitatively linking annual precipitation conditions, reservoir volume, temperature management, and biological outcomes in the river. However, more emphasis could be placed on parameter estimation, as well as sensitivity analyses, to further develop confidence intervals around the embryonic mortality that can be attributed to temperature. Survival, and hence mortality, are complicated metrics to estimate for juvenile salmonids, even with the benefit of many marked and recaptured individuals in a system (e.g., Hartson and Kennedy 2015, Myrvold and Kennedy 2016). Admittedly, a mark-recapture approach to estimating survival estimates cannot be easily applied to the early life stages and large spatial scales represented in this current work, but more research could be proposed to more confidently separate the temperature-dependent mortality that is of fundamental interest from other mechanisms of mortality in the system.

The components of survival across two very different life stages, egg and fry, would appear to be confounded. The research upon which the model is based (Martin et al. 2017), correctly assumes that thermal tolerance of fry is higher for fry than for embryos. However, the assumption that fry mortality is temperature-independent, at the experienced temperatures, is also simplistic and ignores bioenergetics constraints on juveniles near temperature thresholds (Myrvold and Kennedy 2015), as well as carryover effects of high temperature experienced throughout alevin and fry stages. If the Martin model is to be widely applied in the interpretation of egg survival, additional consideration of how uncertainties about fry and juvenile mortality affect the conclusions for thermal jeopardy of eggs may be required.

Based on the IRP's interpretation of the model, mortality is separated into two component models – an egg mortality model and a fry mortality equation. The egg mortality is based upon a probabilistic temperature-dependent egg survival model. This survival model is based upon laboratory data reported from two studies (Jensen and Groot 1991, USFWS 1999) that converge on 15.2 °C or 15.4 °C as a critical temperature for embryos. When applied to field temperature data from 1996 to 2015, these temperatures “failed to explain significant variation in the percent of embryos surviving through to the fry stage” (Martin et al. 2017). The workshop presentation (Danner, NMFS) and Martin et al. (2017) posed two hypotheses for why the lab model's

predicted survival, estimated at ~20%, had so little predictive capability for observed survival, estimated at 5-50%. The alternate hypotheses are:

- Other factors may drive variation in annual survival; or
- Temperature tolerance under field conditions may be lower than under idealized laboratory conditions.

Little research has been conducted on the first alternative hypothesis. However, there is some modeling evidence supporting the second hypothesis based upon a theoretical, flow-based oxygen depletion of the *in situ* thermal tolerance. By dropping the critical temperature more than 3 °C to 12.0 °C, the model captured more of the observed variation in survival, including the outlier years of unusually high temperatures (and low observed survival at 5%) in 2014 and 2015.

The model also incorporates a temperature-independent background survival probability from egg to fry stage that essentially uses a density dependent fry survival model based upon the Beverton-Holt relationship. This attempts to estimate background mortality based largely upon the number of breeders (redds and carcasses) that are estimated annually and is imposed *after* the temperature dependent mortality at the egg stage.

The IRP discussed some concerns regarding the general approach to quantifying *observed mortality* in the system over the period of survival modeling (Martin et al. 2017). Generally, the temperature-dependence in the Martin model assumes that other sources of mortality in the system are understood. This is a difficult assumption to accept given all of the other attributes of this novel ecosystem. In short, the survival estimate is based on the comparison of final survivors, or the count of out-migrating fry, derived from rotary screw trap sub-sampling compared to counts of redds and other evidence of spawning in the system more than 15 miles upstream. For example, if in a model system that begins with 10,000 eggs, equally distributed within four separate redds (2,500 eggs per redd), and if the temperature dependent model in year X predicts that *half* of those survived, 5,000 alevins should result. Next, based upon the Beverton-Holt relationship, there is an expected 40% additional mortality due to fry survival. This results in an expected catch (from an efficiency-corrected rotary screw trap estimate) of 2000 juvenile fish in the sampled population at Balls Ferry. Each of these steps includes parameter estimation with confidence intervals that are not fully considered or presented in the survival numbers. These parameter estimations are also not treated in a sensitivity analysis in order to quantify how uncertainty in true spawner density, egg abundance per redd or capture efficiency of fry affects final survival estimates.

Data are not presented to support density dependent effects at the current population levels through either of the hypothesized mechanisms of superimposition or competition. If superimposition is the primary mechanism of density dependent mortality, the spatially explicit redd information should be able to inform the extent of that relationship. In addition, the background survival parameter should be considered prior to, at least in part, the application of the temperature-dependent survival. This is not how it is currently applied, and the background mortality is considered independently, and in addition to (*i.e.*, after), the thermally-induced embryo mortality. Alternatively, if fry mortality is the major mechanism, then it would make sense to apply it to post emergence abundance estimates (after temperature-dependent embryo mortality). In such a scenario, the predicted relationship that uses the Beverton-Holt relationship should not be based on the number of redds, or spawners, but on the surviving densities of the egg mortality model. As it has been presented, densities for the carrying capacity model are based upon densities of females or redds, but to the extent that the Beverton-Holt relationship represents survival for alevins and fry, it should consider the mortality imposed at the egg stage and its relevance for competition at later life stages. However, in this case, as Martin et al. (2017) states, “observation suggests that most fry only spend a few days between emergence and Red Bluff Diversion Dam passage.” It is unlikely that the density dependence captured by the Beverton-Holt relationship makes sense mechanistically over such short time periods, broad spatial areas, and overall low densities. The model could be improved with an increased understanding of the extant mechanisms and timing of density-dependent survival in the system. In addition, more research designed to test the density dependence relationship used in the background mortality estimates of the Martin model would be useful.

Some assumptions in the model that should be more carefully considered, as well as some opportunities for further research include:

- Separating pre-hatch and post hatch survival. Future research could address this, but it could be a significant undertaking that introduces more uncertainty into the model. However, as it stands, the results and their application hinge upon the confidence with which embryonic mortality is assigned, particularly when it is recognized that survival from redd locations (embryos) to Balls Ferry (fry) is likely complicated.
- Much confidence is placed on the starting size of the embryo population. This is apparently based on both redd surveys and carcass surveys, but clearly not every redd is necessarily viable. It is widely recognized that females sometimes

dig false redds and, conceivable, this occurs more under some environmental conditions than others. The Beverton-Holt term seeks to deal with this in a density dependent matter, but there may be other density independent concerns about turning redd data into embryo abundance.

- A conceptual diagram presented during the review, (E. Danner, NMFS, Slide 23,) nicely summarized how survival is estimated as a daily time step through the residence of the redd. However, it is unclear how, or if, variable temperatures experienced by fry are incorporated into a single survival number for those days that exceed the critical temperature (T_{crit}). A public opinion presentation at the review questioned whether egg mortality risk remains constant across the incubation period or should be treated as a dynamic property based upon the duration of egg incubation. Questions were raised with the egg mortality model about whether metabolic demands just after fertilization were as high as those 20-40 days post fertilization. This is not the general case wherein, during development, the embryo requires increasing O_2 as egg mass is converted into tissue. Given the high degree of precision that the model seeks to capture in terms of the temperature-flow-mortality relationships, it would seem appropriate to consider that temperature thresholds (and the associated critical O_2 levels) immediately following fertilization are lower than that required several weeks later. As is presently considered, the model might overestimate the duration or extent over which eggs are subject to thermal stress. Incorporating this level of specificity into an already complicated and assumption-laden model would be nice, but the practicality of temporally modifying system-level temperature targets over a potentially extended period of fertilization dates would be too cumbersome. Managing for the peak of spawning under a fixed temperature criterion (as appears to be the case) might be the most logical choice, but considering variation in spawn timing and stage dependent embryo requirements would also be an important refinement to the model.

In proposed future applications of this model (e.g., draft proposed 2017 Shasta RPA amendment document, p. 21), meeting temperature-dependent mortality targets defines the amount of reservoir storage required. However, this mortality is not solely dependent on the temperature of reservoir releases into the Sacramento River. It is also affected by the spatial distribution (and abundance) of redds (temperature-independent mortality). So, it is not entirely clear how future population dynamics or dispersion would or could affect operations. At the very least, these spatial considerations are critical for establishing temperature compliance locations. For example, there was a broader than expected dispersion of spawning fish approaching 10 miles downstream in the warmer

years of 2014 and 2105 (E. Danner, NMFS, Slide 40) thus exposing these particular redds, a subset of the entire modeled population, to higher mortality probability. Within any given year, this means that a truly responsive water management plan should consider where and how many redds there are in the system in addition to the projected temperature dependent mortality. While this may or may not represent a meaningful or feasible consideration within any given year, it is increasingly appreciated that salmonid populations can exhibit rapid evolutionary responses to environmental change (Hegg et al. 2013, Waples et al. 2017). Persistently managing temperature in the system in a way that minimizes the opportunity for the selection of traits that may confer resilience in a population, may itself be counterproductive. Thus, the consideration of a water release schedule that can respond to changes in distribution and abundance may be desirable in years where population levels and cold-water storage can accommodate it.

11) How appropriate is the application of the Australian model (Mount et al. 2016) in defining objectives for Winter-run Chinook salmon and temperature management planning (e.g., water year type, Shasta Reservoir storages, and temperature-dependent mortality of Winter-run Chinook salmon)? What additional insight does this model provide for defining objectives?

Mount et al. (2016) provide a conceptual model for management of drought-prone regions like some of those in California and the Murray-Darling system in Victoria, Australia. The Murray-Darling is the largest river system in Australia and is greatly influenced by the ENSO (El Nino Southern Oscillation) (Allan et al. 1996). Rainfall variation in the Murray-Darling is estimated by the Southern Oscillation Index (SOI), a measure of air pressure difference between Tahiti and Darwin, Australia. These variations are phase-locked into the annual cycle (Nicholls 1991). Thus, management of the Murray-Darling can be anticipated on a more predictable cycle than for management of California rivers. If such predictions were available for the Sacramento-San Joaquin system, it might be possible to refine predictions of water availability into the future.

Thus, the scientific appropriateness of the model is on somewhat shaky footing. Mount and colleagues warn that there are several considerations to their proposed protocol:

- Duration of Drought - Currently, drought in California is relatively short-term. However, climate change over the coming decades may make California systems much more like Australia.
- Differences in Snowpack Storage - little or no snowpack storage drives Victorian systems while California systems are largely dependent upon snowpack for

delivery of the cold water that is used for temperature management. If, as mentioned earlier, snowpack coverage is declining, the ability to regulate cold-water flows is also in jeopardy.

- Role of groundwater - Australian systems depend upon a well-driven system and groundwater recharge.
- Targets of conservation - While California tends to focus upon recovery or maintenance of salmonid populations, Australian conservation efforts are aimed at restoration of ecosystem integrity.
- Different species of concern – Australian species of concern focus primarily upon endemic and endangered species, most of which are considered to be forage fish rather than top carnivores. Indeed, much of the management of the Murray-Darling is focused upon the reduction or elimination of introduced exotics: Rainbow Trout (*O. mykiss*), Brown Trout (*S. trutta*), Atlantic Salmon (*S. salar*), and Brook Trout (*S. fontinalis*). Thus, some management targets in California might be substantially different from those in Victoria.

It would be useful to consult Young (2001) to understand the differences between the two ecosystems.

One thing that Mount and colleagues do suggest that is important to both agencies is the essential nature of **planning for drought rather than reacting to drought**.

The Mount et al. (2016) system may be useful, but the appropriateness of the model can and should be tested by establishing an operations-decision-tree using Mount's guidance. It would then be relatively easy to go back to each year over the past decade and evaluate at what junctures in operations Mount and colleagues' concepts would have led to a different operational decision. If those alternate (Mount) decisions would have led to a better outcome (e.g., increased reliability of meeting temperature targets), then it could be assumed that the Mount et al. system is preferable to current decision/options.

12) How appropriate are the interim temperature-dependent mortality objectives for informing the development of life-stage specific survival objectives? What, if any, guidance should be incorporated to refine the objectives?

The temperature dependent mortality limitations are an adequate first step in establishing interim criteria for reservoir management. The application of exceedance

levels based upon water conditions is a logical first step and linking it with the conceptual model of Mount et al. (2016) is a useful extension of this framework. However, it was unclear what data, models, or logic were used to establish the exceedance levels (30% down to 3%). From the historical temperature profiles (1990 and through to 2015), it appears that in six years early life stages would face zero mortality while in at least seven years they would suffer mortality up to 70%. However, total survival, the “product of temperature dependent survival and background survival,” would appear to average across the survival landscape that is consistently between 20% and 30% (i.e., mortality > 70%) across years 1996-99 and 2002-2014 (NMFS, Appendix 4, 2017). Much of this mortality is for a population that, historically, was unlikely to have spawned in this section of the Sacramento River, or at these temperatures. Before establishing guidelines for a model that is focused on temperature-dependent embryo mortality, there is a need to better understand how other sources of mortality (NMFS, Appendix 4, 2017) affect the number of individuals expected to make it to the Delta.

Thus, the approach is limited by not separating temperature dependent mortality from other sources of mortality, as well as by other sources of error in applying Martin et al.'s (2017) temperature mortality model. Furthermore, the identified thresholds of temperature-dependent mortality need to be biologically justified, and managers should confirm that other important life-cycle stages that require temperature consideration are not neglected. Finally, it was not clear how compliance (based upon survival) can be accurately measured, how uncertainty would be incorporated or what the consequences of exceeding mortality thresholds would be.

7-Day Average of the Daily Maximum temperatures (7DADM) vs. Daily Average Temperature (DAT).

13) How appropriate is the use of 7DADM for the temporal and spatial scale involved in temperature management implementation?

The purpose of averaging any timeseries dataset is to smooth out short term fluctuations while maintaining the general trend in the data for a specified period of interest. For this proposed application of analysis of temperature trends downstream of Shasta, the IRP identified:

- a) limitations to the 7DADM approach,
- b) additional averaging approaches that should be considered,
- c) the need for evaluating the operational feasibility of the criteria, and

- d) the need for identify biologically-relevant criteria for the types of temperature fluctuations that typically occur in the system.

The 7DADM proposed by NOAA Fisheries is an arithmetic moving average, which assigns equal weight to all values in the timeseries. This approach is often used to filter out fluctuations in data centered around the mean. However, for datasets that are not centered on the mean, the moving average will create a lag in the data that can bias the average by the previous data point. This type of averaging lag is evident in Slide 7 of the workshop presentation (Sawyer, NOAA, Temperature Metrics: DAT and 7DADM).

Alternate averaging approaches should be considered in addition to 7DADM. For example, the weighted moving average is a simple statistical approach in which the most recent data are given the most weight while each previous point has a linearly decreased weight.

7DADM Linear Weight=

$$(T(7)*7+T(6)*6+T(5)*5+T(4)*4+T(3)*3+T(2)*2+T(1)*1)/(7+6+5+4+3+2+1)$$

This approach represents the fluctuating temperatures downstream of Shasta Dam better than an arithmetic mean average (Figure 3). This approach is consistent with the length of averaging specified in the U.S. EPA (2003) report, but is a better averaging approach in a river system where temperatures fluctuate at a timescale of less than a week. In addition, managers may consider if averaging over a shorter period (e.g., 3DADM, 4DADM) would be more protective of fisheries, as well as the impacts on cold water resources over time.

Multiple averaging schemes that could be used to specify an average daily maximum at Jelly's Ferry are illustrated in Figure 3. The proposed 7DADM significantly lags the observed data. However, both a 3-day and 4-day average daily maximum both follow the sharp rise in observed temperature with less lag at the temperature peak. The simple linear weighting of the 7DADM improved the lag in temperature, while still keeping the peak maximum temperature computed with the 7DADM.

Furthermore, as previously noted, the operational feasibility of the two criteria need further evaluation. For example, it may not be appropriate to adopt 7DADM for temperature compliance until water operators can devise a feasible strategy for real-time system operations under 7DADM that would maintain temperature compliance at least as well as the current DAT-based strategy. A starting point for this task might be to clearly articulate the current DAT-based strategy, including its forecasting and lagged system-response features. Such an analysis would likely require use of hydrodynamic and temperature models, which already exist for the basin. Analysis should then be

conducted to modify the current strategy to represent operations with 7DADM. The proposed 7DADM strategy could then be applied to a time series of historical flows to evaluate its success relative to what was actually achieved under the DAT strategy.

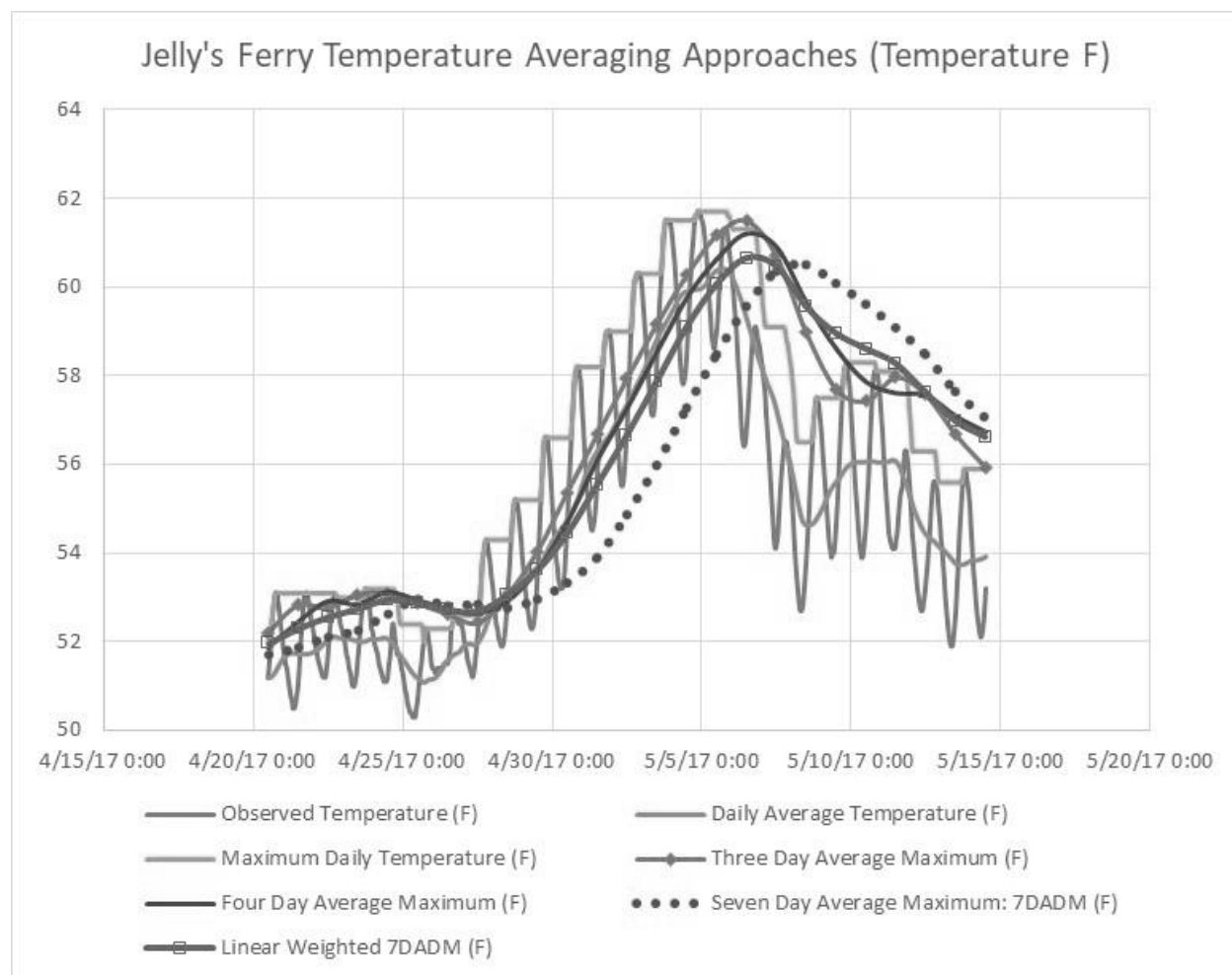


Figure 3. Comparison of averaging approaches that could be used to specify daily average temperature (DAT) at Jelly’s Ferry.

This comparison should be conducted during wet, average, and dry years to examine the timing and volumes of water demands for meeting the two criteria.

Finally, evaluation of the two temperature targets requires some demonstration of the ecological relevance and presumed biological benefits of 7DADM and DAT. The justification for applying 7DADM was based on an U.S. EPA (2003) report that was not provided to the IRP, the results of which are derived from data in another physiographic region. A demonstrated ecological relevance is needed for any temperature target,

where relevance should be defined by the physiological costs to fish of the combined magnitude and duration of peak temperatures.

14) How well is best available science incorporated into the draft proposed amendment's rationale for the change in temperature metric (from DAT to 7DADM) and location (farthest downstream, to the California Data Exchange Center CCR gage location [as a surrogate for the most downstream redd location])?

The rationale in the draft proposed amendment to change the temperature metric and move the temperature compliance point upriver to the CCR gage location appears to rely on a combination of sources including:

- (a) the U.S. EPA (2003) report recommending temperatures that should support survival of Chinook Salmon eggs and alevins;
- (b) the model described in Martin et al. (2017) which predicted that slower flowing waters at elevated temperatures would not provide a sufficient oxygen supply for embryo survival in redds; and
- (c) recommendations of the 2014 and 2015 LOBO panels, which offered an expert opinion and recommendation for conserving cold-water resources by moving the temperature compliance point upstream so as to maintain cold water flows only to the downstream river reaches actually used by Chinook Salmon for spawning.

It is the 2017 IRP's understanding that assessing the quality of data in the U.S. EPA (2003) report was not within the scope of our charge. Since this literature source appears to be the sole basis for the agencies' consideration of 7DADM, the IRP has little ability to determine if choices made by the agencies are using the best available science.

The recommendations of the previous LOBO panels were a matter of logic and expert opinion. The reasoning was that temperature and flow volumes, which cleaned fine sediments from redds, interacted with dissolved oxygen to create microhabitat conditions that would support survival of eggs and embryos. It was also clear from experience in previously dry years that limited cold-water resources were insufficient to meet temperature criteria set for river reaches that were downstream of the areas used by salmon for spawning. Rather than raising the temperature compliance target (an option considered by the agencies), the LOBO IRP recommended moving the compliance point upriver where sufficiently cold temperatures could be maintained over all, or most of, the redds yet still conserve some cold-water storage for use later in the year to improve conditions for other life stages. The Martin et al. (2017) paper provides

some additional support for the reasoning and expert opinions of the previous LOBO panels. However, even taken collectively, the information relied upon for moving the temperature compliance point upriver falls short of being conclusive evidence supporting the use of best available science as a foundation for the decision.

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APPENDIX 1 – Review Materials for 2017 IRP Review

Review Materials Available to the 2017 LOBO Independent Review Panel

- I. The following documents were provided in electronic format as required reading by the IRP prior to the 4-day workshop in Sacramento, CA on 4-7 December 2017:***

Stanislaus River Watershed/Eastside Division RPA Actions

1. Stanislaus Operations Group (SOG) Annual Report of Activities (water year 2017)
2. Stanislaus Operations Group (SOG) Additional Materials

Enhanced Delta Smelt Monitoring (EDSM) Program

3. Summary of Enhanced Delta Smelt Monitoring (EDSM) Monitoring for LOBO Independent Review Panel

Results from the Old and Middle Rivers (OMR) index demonstration project

4. *Draft* Old and Middle River Flow Review: USGS Gauge Readings versus Index Calculations for 2011 through 2017
5. Extension of the Old and Middle River index demonstration project letter (March 13, 2017)

Draft proposed Shasta RPA amendment

6. NMFS' draft proposed Shasta RPA amendment:
http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/nmfs_s_draft_proposed_2017_rpa_amendment_-_january_19_2017.pdf
7. Sacramento River Temperature Task Group (SRTTG) Meeting Materials (water year 2017).

- II. The following additional reports were made available in electronic format for supplemental use in providing historical context for the IRP:***

Enhanced Delta Smelt Monitoring (EDSM) Program

1. Smelt Working Group (SWG) Annual Report of Activities
2. 2015 DSEM/DSEE Proposal Report
3. The Enhanced Delta Smelt Monitoring Program Standard Operating Procedures
4. Enhanced Delta Smelt Monitoring Preliminary Abundance Analysis

5. Enhanced Delta Smelt Monitoring Preliminary Abundance Analysis Larval/Juvenile Life stages
6. Enhanced Delta Smelt Monitoring Preliminary Abundance Analysis Phase 3 Sampling
7. DSM TN 23. Fish density estimation in a zero inflated field with doubly truncated geometric sampling

Results from the Old and Middle Rivers (OMR) index demonstration project

8. NMFS Response Re: Extension of the OMR Index Demonstration Project (June 27, 2017)

Draft proposed Shasta RPA amendment

9. Martin, B. T., A. Pike, S. N. John, N. Hamda, J. Roberts, S. T. Lindley, and E. M. Danner. 2017. Ecology Letters 20(1):50-59 Phenomenological vs. biophysical models of thermal stress in aquatic eggs.
10. Mount, J., B. Gray, C. Chappelle, J. Doolan, T. Grantham, N. Seavy. 2016. Managing Water for the Environment During Drought: Lessons from Victoria, Australia. Public Policy Institute of California, San Francisco, CA. June 2016.
11. The Central Valley Temperature Mapping and Prediction (CVTEMP):
<http://oceanview.pfeg.noaa.gov/CVTEMP/>
12. Reclamation's request for Shasta RPA adjustment:
http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/bureau_of_reclamation_s_request_for_shasta_rpa_adjustments_-_august_2_2016.pdf
13. NMFS and Reclamation letter exchange regarding the Shasta RPA adjustment:
http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/nmfs_response_to_reclamation_s_request_for_shasta_rpa_adjustments_-_august_17_2016.pdf
14. Reclamation's initial response to NMFS' draft proposed Shasta RPA amendment:
http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/reclamation_s_response_to_nmfs_s_draft_proposed_2017_rpa_amendment_-_january_25_2017.pdf
15. Reclamation's detailed response to NMFS' draft proposed Shasta RPA amendment:
http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/reclamation_s_detailed_comments_on_nmfs_s_draft_proposed_2017_rpa_amendment_-_march_22_2017.pdf

Technical Team Reports and Other Materials

16. Delta Operations for Salmonids and Sturgeon Group (DOSS) Annual Report of Activities
17. Sacramento River Temperature Task Group (SRTTG) Annual Report of Activities
18. Clear Creek Technical Team (CCTT) Annual Report of Activities
19. American River Group (ARG) Annual Report of Activities
20. Interagency Fish Passage Steering Committee (IFPSC) Annual Report of Activities
21. Summary Matrix of the NMFS and Service Coordinated Long-term Operation BiOps RPA actions

III. *The following background materials also were available to the IRP:*

- 2016 Long-term Operations Biological Opinions (LOBO) Informational and Update Meeting, December 6, 2016 <http://deltacouncil.ca.gov/events/science-program-review/2016-long-term-operations-biological-opinions-lobo-annual-science>
- Letter from National Marine Fisheries Service: Re: Proposed Modification to the Annual Review Schedule Required as Part of the Reasonable and Prudent Alternative in the National Marine Fisheries Service's 2009 Biological Opinion on the Coordinated Long-term Operation of the Central Valley Project and State Water Project, June 30, 2016 <http://deltacouncil.ca.gov/docs/letter-national-marine-fisheries-service-re-proposed-modification-annual-review-schedule>
- Letter from U.S. Bureau of Reclamation: Proposed Modification to the Annual Review Schedule Required as Part of the Reasonable and Prudent Alternative in the National Marine Fisheries Service's 2009 Biological Opinion on the Coordinated Long-term Operation of the Central Valley Project and State Water Project, April 25, 2016 <http://deltacouncil.ca.gov/docs/letter-us-bureau-reclamation-proposed-modification-annual-review-schedule-required-part>
- 2015 Annual Science Review:
 - Report of the 2015 Independent Review Panel (IRP) on the Long-term Operations Biological Opinions (LOBO) Annual Review (December 6, 2015). <http://deltacouncil.ca.gov/docs/delta-isb-delta-science-program-isb-products-lobo/report-2015-independent-review-panel-irp-long>
 - Federal Agencies' Response to the 2015 Independent Review Panel's Report
- 2014 Annual Science Review:
 - Report of the 2014 Independent Review Panel (IRP) on the Implementation of the Long-term Operations Opinions Reasonable and Prudent Alternative (RPA) Actions (December 11, 2014)
 - <http://deltacouncil.ca.gov/sites/default/files/2014/12/2014-12-11-LOBO-2014-Report-Panel-Final.pdf>

- Federal Agencies' Response to the 2014 Independent Review Panel's Report
<http://deltacouncil.ca.gov/docs/delta-science-program-independent-review-lobo-science-program/response-delta-science-program>
- 2013 Annual Science Review:
 - Report of the 2013 Independent Review Panel (IRP) on the Implementation of the Long-term Operations Opinions Reasonable and Prudent Alternative (RPA) Actions (December 7, 2013).
http://deltacouncil.ca.gov/sites/default/files/documents/files/LOBO_2013_Report_Final_120613_FINAL.pdf
 - Federal Agencies' Response to the 2013 Independent Review Panel's Report
http://deltacouncil.ca.gov/sites/default/files/documents/files/Joint_Federal_Response_to_DSP_Final_2_3_14.pdf
- 2012 Annual Science Review:
 - Report of the 2012 Independent Review Panel (IRP) on the Implementation of the Long-term Operations Opinions Reasonable and Prudent Alternative (RPA) Actions (December 1, 2012).
http://deltacouncil.ca.gov/sites/default/files/documents/files/Report_2012_DSIRP_LOOAR_120112_final.pdf
 - Review Materials, Background Information and Presentations
<http://deltacouncil.ca.gov/2012-long-term-operations-opinions-annual-review-%E2%80%93-review-materials-background-information-and-presentations>
 - Federal Agencies' Response to the 2012 Independent Review Panel's Report (July 19, 2013).
http://deltacouncil.ca.gov/sites/default/files/documents/files/Federal_Agencies_Response_to_the_Panels_Report_July19_2013.pdf
- 2011 Annual Science Review:
 - Report of the 2011 Independent Review Panel (IRP) on the Implementation of Reasonable and Prudent Alternative (RPA) Action Affecting the Operations Criteria And Plan (OCAP) for State/Federal Water Operations (December 9, 2011).
http://deltacouncil.ca.gov/sites/default/files/documents/files/IRP_OCAP_RPA_2011_Final_Report_v2.pdf
 - Review Materials, Background Information and Presentations
<http://deltacouncil.ca.gov/science-program/2011-ocap-review-materials-background-information-and-presentations>
 - Federal Agencies' Detailed Response to the 2011 Independent Review Panel's Report (June 20, 2012)
<http://deltacouncil.ca.gov/sites/default/files/documents/files/2012-06-20%20Joint%20Fed%20Resp%20to%20DSP%20for%20IRP.pdf>
- 2010 Annual Science Review:
 - Report of the 2010 Independent Review Panel (IRP) on the Reasonable and Prudent Alternative (RPA) Actions Affecting the Operations Criteria and Plan (OCAP) for the State/Federal Water Operations (December 9, 2010).

http://deltacouncil.ca.gov/sites/default/files/documents/files/workshop_OCAP_2010_IRP_RPA_Final_Report_121310_0.pdf

- Review Materials and Presentations <http://deltacouncil.ca.gov/events/science-program-workshop/workshop-ocap-integrated-annual-review>
- Joint Department of Commerce and Department of the Interior Response to the Independent Review Panel's (IRP) 2010 Report of the Reasonable and Prudent Alternative (RPA) Actions Affecting the Operations Criteria and Plan (OCAP) for the State/Federal Water Operations (March 9, 2011)
http://deltacouncil.ca.gov/sites/default/files/OCAP_2010/workshop_OCAP_2010_review_detailed_response_letter_032111.pdf
- NMFS 2009 RPA with 2011 amendments
http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/040711_ocap_opinion_2011_amendments.pdf
- USFWS BiOp on the Long-Term Operational Criteria and Plan (OCAP) for coordination of the Central Valley Project and State Water Project (pages 279-282 and 329-356) https://www.fws.gov/sfbaydelta/Documents/SWP-CVP_OPs_BO_12-15_final_OCR.pdf
- National Academy of Sciences March 19, 2010, report
<https://www.nap.edu/catalog/12881/a-scientific-assessment-of-alternatives-for-reducing-water-management-effects-on-threatened-and-endangered-fishes-in-californias-bay-delta>
- VAMP peer review report 2010: <http://www.sjrg.org/technicalreport/2009/2010-VAMP-Peer-Review-Panel-Report.pdf>
- State Water Board's 2010 Delta Flows Criteria Report:
http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/final_rpt080310.pdf

IV. *The following additional materials were made available at the Workshop in Sacramento for supplemental use of the IRP:*

- **Public Comments**, including the following document:

Anderson, J. (December 6, 2017) Comments on the egg mortality model used to develop the Shasta RPA – an analysis funded by San Luis & Delta-Mendota Water Authority

APPENDIX 2 – Improved predictions of the USGS tidally-filtered, 3-day-average, OMR flow estimate (GS)

The IRP suggests that the following approach can predict the USGS tidally-filtered estimates of OMR flow with greater accuracy than that of the Index method alone.

According to the OMR report (p. 2), the IND value for yesterday is used for today's operating decisions. Thus, we set day k equal to "yesterday relative to today's operations. We also assume that IND(k) is used as a prediction of GS(k), for any day k (this was not clear in the report). GS is a tidally-filtered 3-day average of raw data from 2 gages. The report states that GS is available only after a 3-day lag (p.2). Some of this delay must be due to institutional delays, because all of the raw data need to calculate GS(k-1) has been acquired by day k. That is, USGS gage data for days (k-2), (k-1) and k should be available on day k, to calculate GS(k-1), as the 3-day, tidally-filtered average centered on day (k-1). Thus, we assume that with communications improvements, the true, measured value of GS(k-1) could be available on day k.

Our proposal for improving on the IND prediction is inspired by the dynamic error-correcting properties of a Kalman filter (Bozic 1979). Our method assumes that GS changes fairly slowly on a daily time scale. In other words, it assumes that, on most days, the value of GS on day k, denoted by GS(k), is not very different from the flow on the previous day, GS(k-1). This assumption is reasonable because GS(k) and GS(k-1) share input data from 2 of the 3 days used in the calculation of each value. Hence, GS(k-1) should be a fairly good prediction of GS(k).

Thus, on any day k, the values of IND(k) and GS(k-1) should both be available as independent, fairly accurate, predictions of GS(k). We suggest using a weighted average of these two predictions, to give a new prediction of GS(k) that is closer to its true value than would be predicted by IND(k) alone.

The weighted-average predicted value, GSP(k), would be calculated as:

$$\text{GSP}(k) = w(k) \cdot \text{IND}(k) + (1-w(k)) \cdot \text{GS}(k-1) \quad (1)$$

where the weight, $w(k)$, can vary from day to day, and could be positive or negative. To specify a weight value, $w(k)$, assume that weights will also change little from day to day. Thus, as a value for $w(k)$, we propose using the estimated weight value from day (k-1) that would have made the predicted and observed values of GS(k-1) perfectly agree. On day k, the true value of GS(k-1) is known. And the predicted value of GS(k-1)

is given by the right-hand side of Equation 1, substituting (k-1) for k. So, the estimated weight, $w_E(k-1)$, that makes the predicted and observed values agree for day (k-1), will satisfy:

$$GS(k-1) = w_E(k-1) \cdot IND(k-1) + (1 - w_E(k-1)) \cdot GS(k-2) \quad (2)$$

Solving for $w_E(k-1)$ allows it to be directly calculated from quantities that are all known on day k:

$$w_E(k-1) = [GS(k-1) - GS(k-2)] / [IND(k-1) - GS(k-2)] \quad (3)$$

We propose to let the weight $w(k)$ be equal to its most recent optimal value, $w_E(k-1)$, in order to implement Equation 1 on day k. As an option, one should get a more robust estimate for $w(k)$ by setting it equal to the average of the w_E estimates from several (4 or 5) of the most recent previous days. Finally, to allay DWR's concern with missing data for $GS(k-1)$ and/or $GS(k-2)$, one could just use IND alone as the predictor, on days when one or both of these GS values are missing.

This method appears promising to the IRP, and its accuracy should be relatively easy to assess using historic data sets for GS and IND . If our method does indeed reduce prediction errors, then DWR may be motivated to obtain $GS(k-1)$ values on any day k, and hence be able to implement the method. If this is not feasible, and the most recent available value of GS is from day (k-2), then one can instead use a weighted average of $IND(k)$ and $GS(k-2)$, by modifying the above approach.

To: aurelia_skipwith@ios.doi.gov[aurelia_skipwith@ios.doi.gov]
From: Anderson, John M.
Sent: 2018-02-08T11:38:58-05:00
Importance: Normal
Subject: Skookumchuck
Received: 2018-02-08T11:39:30-05:00

Aurelia,

As a follow-up to our meeting on February 5th please find the following responses you raised on the Skookumchuck Wind Farm project.

- **A clear explanation of the delay on the delivery of the draft HCP, expected delivery date, and detailed account of what has been shared with the Region 1 staff on this.**
 - RES delivered the first draft HCP July 10
 - USFWS provided comments back on Aug 25 and Sept 5 many needed further discussion to properly address.
 - RES and USFWS held calls and meetings in October and November to discuss proposed revisions in response to USFWS comments. RES used the input from those calls to inform the revised draft.
 - RES informed USFWS (Tim Romanski and Mark Ostwald) of the final decision to reduce the layout from 51 turbines to 38 turbines on November 29 and that they would be revising the revised HCP to address the layout changes.
 - RES emailed Mark Ostwald on January 2 to let him know a new draft should be available January 26.
 - During a January 10 call with Mark Ostwald and Tim Romanski (mostly focused on NEPA contracting), RES provided an update on the HCP revisions
 - During call with Tim Romanski on January 25, RES provided an HCP timeline update
 - Also on January 25, RES emailed Mark Ostwald with the latest draft of the NEPA RFP and MOU and an update that draft will be a bit later than the Jan 26 date, due to the need for owner/investor to conduct a final review of the draft.
 - Draft HCP provided to USFWS on February 6.
- **A clear confirmation of our COD date and explanation of why that date is firm.**
 - COD is now June 2019.
 - This is a six month delay since our December 14 meeting, and the delay arose from owner/investor confidence in the permitting timeline, which in turn has led to delays in capital investments (e.g. turbines).
 - Contractual obligations dictate that all permits need to be in hand by December 2018 to achieve the June 2019 COD date.
 - RES is already responsible for paying liquidated damages because the contracting parties do not have confidence that permit will be in hand by Dec 2018. Liquidated damages will continue or investors may back out if they lose confidence in obtaining permitting. Therefore, sticking to the following schedule and meeting the identified milestones is absolutely critical.
- **A clear timeline working backwards from the COD date, of when things need to be completed and why we believe they can be achieved.**
 - Given the year delay, it will be difficult, but possible, to achieve a ROD by December

2018. The latest RFP now provides the schedule below, but USFWS has not yet sent it out. This schedule is achievable but must be tightly managed to avoid any schedule slip. It is imperative that a contractor be brought on board and the NOI get published.

Reverse chronological order:

- COD June 2019
- ROD/ITP issued **December 15, 2018**
- Final EIS must be ready by **November 15, 2018**
- Public Comment period begins (60-days) **no later than August 2018.**
- Draft PEIS is provided to USFWS Washington Office and **Solicitors no later than July 2018.**
- NEPA contractor submits preliminary draft EIS to USFWS **no later than May 31, 2018.**
- NEPA contractor selected by **March 1, 2018**
- NOI must be published by **February 28, 2018**
- RFP for contractor must happen **ASAP.**

□ **A citation and/or opinion as to why review of the draft HCP is unnecessary for purposes of waiting to begin the NEPA process.**

- Scoping an EIS (e.g. the NOI) requires only basic information. USFWS has already seen a draft HCP and talked through HCP and Project issues extensively to understand the basics. Many HCPs have proceeded with NEPA scoping without a draft HCP and the USFWS' guidance supports this.

- USFWS HCP Handbook language that supports that NEPA proceed concurrently/ahead of having an application-ready HCP draft:

- "The Services also use the NEPA process to involve other stakeholders, including tribes, other affected individuals, the public, non-governmental organizations (NGOs), and anyone that would have an interest in the project to identify concerns **early in the HCP development process.**" p. 2-5
- HCP Table 2.4a provides a Gantt chart that shows the EIS process kicking off before the draft HCP is complete. p. 2-11
- "Our preparation of the NEPA documents should progress along with the HCP as we gather and analyze data. " at 13-1.
- "Public notices are required to announce scoping for the EIS. Public notice for the availability of the draft EIS is generally combined with the public notice of availability of the HCP as required under ESA." At 13-14. (implies that complete/application draft HCP is not necessary until publication of the draft EIS/NOA)

- In addition, Council on Environmental Quality (CEQ) guidance titled "Memorandum for General Counsels, NEPA Liaisons and Participants in Scoping" specifically recognizes that the scoping process can assist in early

identification of serious problems with a proposal, “which can be changed or solved because the proposal is still being developed.” The guidance further states that “the first stage [of scoping] is to gather **preliminary information** from the applicant, or to compose a clear picture of your proposal, if it is being developed by an agency.”

https://energy.gov/sites/prod/files/CEQ_Scoping_Guidance.pdf

- Examples of NOI publication prior to receipt of application draft HCP:
 - LCRA Transmission Services Corporation HCP, 82 Fed. Reg. 35539 (Jul. 31, 2017). “We...advise the public that we intend to evaluate the impacts of, and alternative to, the proposed issuance of an [ITP]...LCRA TSC proposes to draft a Habitat Conservation Plan in support of the ITP. We also announce plans for public scoping meetings and the opening of a public comment period under the [NEPA].”
<https://www.fws.gov/policy/library/2017/2017-16056.html>
 - American Electric Power HCP 82 Fed. Reg. 6625 (Jan. 19, 2017). “We...are notifying the public that we intend to prepare a draft [EIS] to evaluate the impacts of alternatives relating to the proposed issuance of an...[ITP]...AEP intends to apply for an ITP and agrees to develop and implement the proposed HCP. We are also announcing the initiation of a public scoping process....”
<https://www.federalregister.gov/documents/2017/01/19/2017-01176/notice-of-intent-to-prepare-a-draft-environmental-impact-statement-for-a-proposed-habitat>
 - Deschutes River Basin HCP 82 Fed. Reg. 34326 (Jul. 24, 2017). “We...intend to prepare a draft [EIS]...to evaluate the potential impacts on the human environment caused by alternatives to the Deschutes River Basin [HCP]. The Deschutes River Basin HCP is being prepared in support of a request for an [ESA] [ITP] authorizing incidental take of listed species caused by covered activities. The potential applicants for the ITP(s) include [eight irrigation districts comprising the Deschutes Basin Board of Control]. We are also announcing the initiation of a public scoping period...”
<https://www.federalregister.gov/documents/2017/07/24/2017-15479/notice-of-intent-to-prepare-a-draft-environmental-impact-statement-for-the-proposed-deschutes-river>
- Additionally, nothing is stopping the USFWS from getting a NEPA contractor on board as RFP responses and contracting will take some time. No draft HCP is required to select and solidify NEPA contractor.

I am also including copies of a letter sent from the Service to RES on June 23, 2017 and RES’s response back to the USFWS on September 18, 2017 that we provided hard copies of in our December meeting. You will note in our response letter, we provide greater detail on the requested Covered Activities (i.e. only operations) to be authorized under the ITP, efforts by RES (in working with the USFWS staff) to reduce the impacts of the project generally, and a discussion of the NEPA alternatives

most notably that the USFWS' scope of review is limited to the proposed agency action (authorizing take) and not authorizing the applicant's project. For ease of reference on that particular point please see USFWS HCP Handbook p. 4-14.

If you have any questions on this or any other aspect of the ESA/NEPA process for this project please do not hesitate to contact me and I will work with the client and project attorneys to provide you with answers to your questions.

Sincerely,
John

John M. Anderson

Senior Policy Advisor

NOSSAMAN LLP

1666 K Street, N.W., Suite 500

Washington, DC 20006

janderson@nossaman.com

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To: aurelia_skipwith@ios.doi.gov[aurelia_skipwith@ios.doi.gov]
From: Congressional Sportsmen's Foundation
Sent: 2018-02-09T18:40:50-05:00
Importance: Normal
Subject: Secretary Zinke Signs Order to Promote Conservation of Western Big-Game Winter Range and Migration Corridors
Received: 2018-02-09T18:41:01-05:00

Secretarial Order Signed during Western Hunting & Conservation Expo in Utah

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To All Media
FOR IMMEDIATE RELEASE

CONTACT:
Sara Leonard
sleonard@congressionalsportsmen.org
202-543-6850 x 11

Secretary Zinke Signs Order to Promote Conservation of Western Big-Game Winter Range and Migration Corridors

February 9, 2018 (Washington, DC) - Secretary of the Interior Ryan Zinke signed Secretarial Order 3362, which promotes collaboration between the Department of the Interior and western state fish and wildlife agencies for the conservation of big-game winter range and migration corridors.

Order 3362 fosters collaboration among states, private landowners, and other stakeholders to use the best available science for development of management guidelines that ensure big game populations, including antelope, elk, and mule deer, thrive.

In a Department of the Interior statement, Secretary Zinke stated, "My goal is healthy herds for American hunters and wildlife watchers, and this order will help establish better migration corridors for some of North America's most iconic big game species like elk, mule deer and antelope. American hunters are the backbone of big game conservation efforts, and now working with state and private landowners, the Department will leverage its land management and scientific expertise to both study the migration habits of wildlife as well as identify ways to improve the habitat. For example, this can be done by working with ranchers to modify their fences, working with states to collaborate on sage brush restoration, or working with scientists to better understand migration routes."

Specifically, Secretarial Order 3362 directs the Bureau of Land Management, U.S. Fish and Wildlife Service and National Park Service to:

- Collaborate with state, tribal, and territorial fish and wildlife agencies to attain or sustain state, tribal, and territorial wildlife population goals during the Department's land management planning and implementation, including prioritizing active habitat management projects and funding that contributes to achieving wildlife population objectives, particularly for wildlife that is hunted or fished, and identifying additional ways to include or delegate to states habitat management work on federal lands;

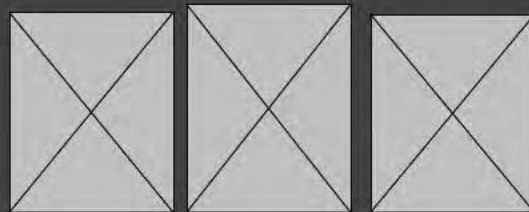
- Work cooperatively with state, tribal, and territorial wildlife agencies to enhance state, tribe, and territorial access to the Department's lands for wildlife management actions;
- Within 180 days, develop a proposed categorical exclusion for proposed projects that utilize common practices solely intended to enhance or restore habitat for species such as sage grouse and/or mule deer; and
- Review and use the best available science to inform development of specific guidelines for the Department's lands and waters related to planning and developing energy, transmission, or other relevant projects to avoid or minimize potential negative impacts on wildlife.

"Developing a strategy that recognizes the impacts human activity can have on migration corridors, stopover areas and winter range is critical to ensuring the future of deer, antelope, elk and hunting opportunity throughout the West," said Congressional Sportsmen's Foundation Federal Land Policy Director Andy Treharne upon issuance of the order. "As state fish and wildlife agencies and sportsmen work to conserve these landscapes, it's great to see that they have a partner in Secretary Zinke and the Department of the Interior."

This Order will assist state wildlife management in Western states including: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

###

Since 1989, the Congressional Sportsmen's Foundation (CSF) has maintained a singleness of purpose that has guided the organization to become the most respected and trusted sportsmen's organization in the political arena. CSF's mission is to work with Congress, governors, and state legislatures to protect and advance hunting, angling, recreational shooting and trapping. The unique and collective force of the Congressional Sportsmen's Caucus (CSC), the Governors Sportsmen's Caucus (GSC) and the National Assembly of Sportsmen's Caucuses (NASC), working closely with CSF, and with the support of major hunting, angling, recreational shooting and trapping organizations, serves as an unprecedented network of pro-sportsmen elected officials that advance the interests of America's hunters and anglers.



Working with Congress, governors and state legislatures to protect and advance hunting, angling, recreational shooting and trapping.

For more information on the Congressional Sportsmen's Foundation go to congressionalsportsmen.org.



Congressional Sportsmen's Foundation,
110 North Carolina Avenue, SE, Washington, DC 20003

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To: Skipwith, Aurelia[aurelia_skipwith@ios.doi.gov]
From: Colin Hayes
Sent: 2018-02-10T20:14:30-05:00
Importance: Normal
Subject: Re: Meeting Request
Received: 2018-02-10T20:14:36-05:00

Wednesday (2/14) at 2pm works great. Thanks in advance.

I'm not bringing anyone with me, just wanted to introduce myself.

The one issue I'd like to discuss if you have time is that of general permits for incidental take of eagles. There is a paragraph (pasted below) from page 33 of the Department's October 24, 2017 report entitled, "Review of the Department of the Interior Actions that Potentially Burden Domestic Energy."

That report can be found

here: https://www.doi.gov/sites/doi.gov/files/uploads/interior_energy_actions_report_final.pdf

Here is the full text of the paragraph:

"Evaluate the Merits of a General Permit for Incidental Take Under the Bald and Golden Eagle Protection Act
The FWS intends to evaluate the merits of a general permit for incidental take under the Bald and Golden Eagle Protection Act (BGEPA). When the bald eagle was delisted under the ESA, FWS issued a rule establishing a permit program for incidental take under BGEPA. On December 16, 2016, FWS adopted a final rule intended to address some of industry's concerns regarding the BGEPA incidental take permit process (81 FR 91494). One measure strongly supported by industry, a general permit for activities that constitute a low risk of taking eagles, was not considered as part of this rulemaking process, though FWS did accept comments on the subject for consideration in a future rulemaking. The FWS is reviewing these comments to determine whether additional regulatory changes would be appropriate to reduce the burden on industry."

See you next week!

C.

Colin Hayes

Founding Partner

202.834.6795



On Sat, Feb 10, 2018 at 1:40 PM, Skipwith, Aurelia <aurelia_skipwith@ios.doi.gov> wrote:

Colin,

I'm available Wednesday, February 14th from 2-2:30pm. If that works, please let me know who will be attending and topics of discussion.

Look forward to meeting you. Thank you.

Aurelia Skipwith

Deputy Assistant Secretary
for Fish and Wildlife and Parks

U.S. Department of Interior
[1849 C Street, NW, Room 3148](#)
[Washington, DC 20240](#)
[\(202\) 208 5837](#)

On Tue, Feb 6, 2018 at 9:38 AM, Colin Hayes <colin@lotsixteen.com> wrote:

Aurelia

We haven't met before, but I was hoping I could stop by to introduce myself in the next week or so. I recently left the Senate Energy & Natural Resources Committee, where I served as Chairman Murkowski's Staff Director.

I have started my own firm with a business partner, and we are doing work for a number of clients including the National Mining Association, the American Wind Energy Association, and others that have an interest in much of the work that you and Secretary Zinke have underway.

Do you have some time for a meeting next week?

I am flexible most of the day on Wednesday (2/14) and on Thursday (2/15) in the morning, if you have availability in those windows.

Thanks in advance!

C.

Colin Hayes
Founding Partner
202.834.6795



To: 'Aurelia_Skipwith@ios.doi.gov'[Aurelia_Skipwith@ios.doi.gov]
From: Ann W Loomis
Sent: 2018-02-20T09:23:34-05:00
Importance: Normal
Subject: Meeting request - Atlantic Coast Pipeline
Received: 2018-02-20T09:23:54-05:00

Aurelia,

The Atlantic Coast Pipeline (ACP) is well-underway with felling trees along the 604-mile pipeline route. As this work is done by hand, we would like the opportunity to discuss the December 22, 2017 Solicitor's Opinion M-37041, the near-term pre-construction schedule for the ACP and potential modifications to tree-clearing windows for migratory birds and Indiana bats. We believe it is necessary to seek your counsel and guidance from Fish and Wildlife Service leadership on amending ACP's migratory bird and timber removal plans.

Joining me in the meeting would be Leslie Hartz, Vice President, ACP Construction and Spencer Trichell, ACP, Environmental Manager. We are available this Thursday, February 22 or next week for a meeting, or any other time at your convenience.

Please let me know if you have any questions or need further information.

Thank you,

Ann

Ann Loomis | Senior Director, Federal Affairs & Environmental Policy | Dominion Energy
400 N. Capitol Street, NW, Suite 875, Washington, DC 20001
202.585.4205 (o)
202.997.1849 (c)



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To: Skipwith, Aurelia[aurelia_skipwith@ios.doi.gov]
From: Ann W Loomis
Sent: 2018-02-22T07:27:11-05:00
Importance: Normal
Subject: Re: [External] Re: Meeting request - Atlantic Coast Pipeline
Received: 2018-02-22T07:27:25-05:00

Aurelia,

Yes we will be there next Thursday. I will follow up with the attendees and a brief description of the issues we wish to discuss.

Thank you.

Ann

Ann Loomis
Dominion Energy
202-997-1849

Sent from my iPhone

On Feb 21, 2018, at 9:27 PM, Skipwith, Aurelia <aurelia_skipwith@ios.doi.gov> wrote:

Ann,

I'm out of the office on travel this week. Does next Thursday at 10am work?

Aurelia Skipwith
Deputy Assistant Secretary
for Fish and Wildlife and Parks

U.S. Department of Interior
1849 C Street, NW, Room 3148
Washington, DC 20240
(202) 208 5837

On Tue, Feb 20, 2018 at 9:23 AM, Ann W Loomis
<ann.w.loomis@dominionenergy.com> wrote:

Aurelia,

The Atlantic Coast Pipeline (ACP) is well-underway with felling trees along the 604-mile pipeline route. As this work is done by hand, we would like the opportunity to discuss the December 22, 2017 Solicitor's Opinion M-37041, the

near-term pre-construction schedule for the ACP and potential modifications to tree-clearing windows for migratory birds and Indiana bats. We believe it is necessary to seek your counsel and guidance from Fish and Wildlife Service leadership on amending ACP's migratory bird and timber removal plans.

Joining me in the meeting would be Leslie Hartz, Vice President, ACP Construction and Spencer Trichell, ACP, Environmental Manager. We are available this Thursday, February 22 or next week for a meeting, or any other time at your convenience.

Please let me know if you have any questions or need further information.

Thank you,

Ann

Ann Loomis | Senior Director, Federal Affairs & Environmental Policy | Dominion Energy

400 N. Capitol Street, NW, Suite 875, Washington, DC 20001

202.585.4205 (o)

202.997.1849 (c)

<image001.png>

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To: 'Skipwith, Aurelia'[aurelia_skipwith@ios.doi.gov]
From: Ann W Loomis
Sent: 2018-02-27T12:45:59-05:00
Importance: Normal
Subject: RE: [External] Re: Meeting request - Atlantic Coast Pipeline
Received: 2018-02-27T12:46:15-05:00

Yes, 11:00 Thursday, March 1 would be fine.

Thank you,

Ann

From: Skipwith, Aurelia [mailto:aurelia_skipwith@ios.doi.gov]
Sent: Tuesday, February 27, 2018 12:35 PM
To: Ann W Loomis (Services - 6)
Subject: Re: [External] Re: Meeting request - Atlantic Coast Pipeline

Ann,

Can we meet at 11am this Thursday?

Aurelia Skipwith
Deputy Assistant Secretary
for Fish and Wildlife and Parks

U.S. Department of Interior
1849 C Street, NW, Room 3148
Washington, DC 20240
(202) 208-5837

NOTE: Every email I send or receive is subject to release under the Freedom of Information Act.

On Thu, Feb 22, 2018 at 7:27 AM, Ann W Loomis <ann.w.loomis@dominionenergy.com> wrote:
Aurelia,

Yes we will be there next Thursday. I will follow up with the attendees and a brief description of the issues we wish to discuss.

Thank you.

Ann

Ann Loomis
Dominion Energy
202-997-1849

Sent from my iPhone

On Feb 21, 2018, at 9:27 PM, Skipwith, Aurelia <aurelia_skipwith@ios.doi.gov> wrote:

Ann,

I'm out of the office on travel this week. Does next Thursday at 10am work?

Aurelia Skipwith
Deputy Assistant Secretary
for Fish and Wildlife and Parks

U.S. Department of Interior
1849 C Street, NW, Room 3148
Washington, DC 20240
(202) 208-5837

On Tue, Feb 20, 2018 at 9:23 AM, Ann W Loomis
<ann.w.loomis@dominionenergy.com> wrote:

Aurelia,

The Atlantic Coast Pipeline (ACP) is well-underway with felling trees along the 604-mile pipeline route. As this work is done by hand, we would like the opportunity to discuss the December 22, 2017 Solicitor's Opinion M-37041, the near-term pre-construction schedule for the ACP and potential modifications to tree-clearing windows for migratory birds and Indiana bats. We believe it is necessary to seek your counsel and guidance from Fish and Wildlife Service leadership on amending ACP's migratory bird and timber removal plans.

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Please let me know if you have any questions or need further information.

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Ann

Ann Loomis | Senior Director, Federal Affairs & Environmental Policy | Dominion Energy
400 N. Capitol Street, NW, Suite 875, Washington, DC 20001
202.585.4205 (o)
202.997.1849 (c)

<image001.png>

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To: aurelia_skipwith@ios.doi.gov[aurelia_skipwith@ios.doi.gov]
From: WilmerHale
Sent: 2018-03-01T11:21:55-05:00
Importance: Normal
Subject: Infrastructure Series: Federal Agency Efforts to Streamline Permitting
Received: 2018-03-01T11:23:09-05:00

This is the second issue of WilmerHale's 10-in-10 Infrastructure Series. In this series, our attorneys will share insights on current and emerging issues affecting infrastructure project developers in the United States.

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REGULATORY AND GOVERNMENT AFFAIRS

March 1, 2018

10-in-10 Infrastructure Series

Federal Agency Efforts to Streamline Permitting

By H. David Gold and Raya B. Treiser

This is the second issue of WilmerHale's 10-in-10 Infrastructure Series. In this series, our attorneys share insights on current and emerging issues affecting infrastructure project developers in the United States. Attorneys from various practice groups at the firm offer their take on issues ranging from permitting reform to financing to litigation, and share their insights from working with clients in a variety of infrastructure sectors, from water infrastructure to energy development to infrastructure development on tribal lands. Read

all issues in this series and our other recent publications.

As discussed in last week's issue of WilmerHale's Infrastructure Series, the Trump Administration's Infrastructure Plan outlines a number of legislative reforms intended to streamline the permitting of infrastructure projects. In addition to legislative proposals, the Administration has taken a number of executive actions to streamline permitting. In this issue, we provide an overview and analyze the implications of the most significant of these efforts.

What has the Trump Administration said about streamlined permitting?

President Trump has issued three Executive Orders that call for streamlined permitting for infrastructure.

- On January 24, 2017, days after taking office, President Trump issued Executive Order 13766 directing federal agencies to expedite environmental review and approvals for "high priority" infrastructure projects. This Executive Order established permitting reform as one of the Administration's top priorities.
- On March 28, 2017, President Trump issued Executive Order 13783 calling for immediate review of all agency actions that "potentially burden the safe, efficient development of domestic energy resources."
- On August 15, 2017, Executive Order 13807 directed federal agencies to seek to complete environmental reviews within two years, to jointly issue "One Federal Decision" covering all individual agency decisions related to a particular project, and to issue all necessary permits or authorizations within 90 days.

In addition to these Executive Orders, the President discussed permitting reform in the 2018 State of the Union, setting a one- or two-year goal for federal permits for infrastructure projects.

How have agencies responded?

In response to these directives, federal agencies are taking steps to review their permitting regulations and internal guidance and identify specific reforms that would create more efficient reviews.

White House Council on Environmental Quality (CEQ). On September 14, 2017, CEQ issued a list of actions it planned to take to implement Executive Order 13807 and to enhance and modernize the federal environmental review and authorization process. These actions include:

- Developing a framework for implementing "One Federal Decision"—along with the Office of Management and Budget and the Federal Permitting Improvement Steering Council (FPISC), which was established under Title 41 of the Fixing America's Surface Transportation Act (FAST-41);

- Coordinating with the FPISC, US Department of Transportation and US Army Corps of Engineers with regard to “high priority” infrastructure projects pursuant to Executive Order 13766;
- Reviewing its regulations under the National Environmental Policy Act (NEPA) to identify necessary changes and clarifications;
- Issuing guidance to simplify and accelerate the NEPA process; and
- Coordinating an interagency working group to identify impediments to efficient environmental reviews and permitting.

Implementation of these action items is underway. Some of the reforms already under consideration include expanding categorical exclusions and revisiting the idea of mitigated Findings of No Significant Impact. In addition, CEQ is working to clarify guidance to agency staff on certain issues, such as the sufficiency of public involvement and notice, cumulative impacts analysis, and the source and adequacy of information relied on in environmental reviews.

The CEQ list also indicates that reforms to other environmental reviews are on the table, including reviews under Section 7 of the Endangered Species Act, Section 106 of the National Historic Preservation Act and Section 404 of the Clean Water Act, which are often done concurrently with NEPA.

The CEQ list is very ambitious and will take a significant amount of time to implement. Meanwhile, the White House recently withdrew its nominee for CEQ chairperson. The lack of a confirmed CEQ chairperson will make implementation of CEQ’s far-reaching reforms even more challenging.

Federal Permitting Improvement Steering Council. To date, the multi-agency FPISC or its member agencies have designated 37 infrastructure projects as “covered projects” under FAST-41. These projects range from natural gas pipelines to wind and solar generation facilities to transmission lines. The Federal Energy Regulatory Commission (FERC) is serving as lead agency for more covered projects than any other agency, with the Department of the Interior a close second. Covered projects—which can be tracked online on the Permitting Dashboard—can benefit from several specific agency policies and tools to improve coordination of federal reviews, increase transparency and accountability, and increase predictability.

US Environmental Protection Agency (EPA). Reflecting Administrator Scott Pruitt’s philosophy that “regulations are just supposed to make things regular,” EPA has proposed a standard, six-month time frame for all permit decisions by September 30, 2022. This objective was set forth in EPA’s Strategic Plan for FY 2018-2022, issued on February 12, 2018, which included a commitment to speed up the processing of permits and modifications with the intent of avoiding delays that impact construction of major infrastructure projects.

Infrastructure projects may require permits under the Clean Water Act or Clean Air Act. Clean Water Act permitting has been embroiled in disputes over the definition of “waters of the United States” (WOTUS) since EPA issued a new WOTUS rule in June 2015. On

February 6, 2018, EPA delayed the applicability date of the WOTUS rule. Meanwhile, EPA will work on a narrower rule, which could streamline permitting simply by making a smaller universe of waterbodies subject to EPA permitting programs.

Regarding the Clean Air Act, EPA has issued two guidance memoranda intended to streamline permitting. On December 7, 2017, EPA issued guidance to establish that it would not “second guess” emissions projections that owners or operators of major stationary sources perform when they determine whether they need to obtain a Clean Air Act permit. On January 25, 2018, EPA issued guidance enabling “major sources” of air pollution to be reclassified as “area” sources. Because the latter are subject to less stringent pollution control standards, the guidance is consistent with the goal of streamlined permitting.

US Department of the Interior. On August 31, 2017, Interior Secretary Ryan Zinke issued Order 3355 calling for streamlined NEPA reviews by Interior Department bureaus. The Order establishes a one-year target for environmental impact statements (EISs), calculated from the issuance of a Notice of Intent to prepare an EIS. The Order also limits EISs to 150 pages, or 300 pages for “unusually complex projects.” These limits may only be exceeded with approval from an Assistant Secretary in coordination with the Solicitor.

Pursuant to Order 3355, Deputy Secretary David Bernhardt has been leading a departmentwide effort to improve NEPA reviews by establishing new best practices and exploring new categorical exclusions or revising existing ones. The Order also tasks each Assistant Secretary with identifying impediments to effective review of infrastructure projects and developing a plan to redress them; considering ways to facilitate review of major infrastructure projects; and identifying infrastructure projects that are fitting candidates for “One Federal Decision.”

- **Bureau of Land Management (BLM).** In a report dated September 27, 2017, BLM set forth a series of recommendations to address the directives in Order 3355. The recommendations are categorized into six themes: (1) improving the NEPA process; (2) leveraging data and technology; (3) expanding coordination and external engagement; (4) integrating effectively with other laws; (5) aligning internal business processes; and (6) improving land use planning.

According to the report, implementing the recommendations will require legislative, regulatory and/or policy remedies and may take a matter of months or years. Among the recommendations are developing BLM guidance on how to elevate infrastructure project EISs for review, developing a memorandum of understanding with FERC and other agencies on roles and responsibilities on interagency infrastructure projects, and developing a process to routinely track costs of environmental reviews and authorizations for each EIS-level project.

While the BLM report states that it was developed by a team of BLM subject matter experts with input from a variety of stakeholders, it was not released publicly until this month. The report has now come under the scrutiny of several members of the House Committee on Natural Resources. In a February 22, 2018, letter to Secretary Zinke, Representatives Raúl Grijalva of Arizona, Alan Lowenthal of California and Donald McEachin of Virginia asked for more detail on the process that led to the report, the status of each of the recommendations and the rationale behind certain conclusions in the report. BLM has already begun to implement some of the recommendations in its

report.

For example, on January 31, 2018, Brian Steed, BLM's Deputy Director for Policy and Programs, issued Instruction Memorandum No. 2018-034, which updated BLM's oil and gas leasing policy in connection with land use planning and lease parcel reviews.

Under the updated policy, BLM eliminated the use of master leasing plans (MLPs). While the Obama Administration developed MLPs to encourage stakeholder input early in the planning process, the updated policy states that MLPs "created duplicative layers of NEPA review." The updated policy directs field officials not to initiate any new MLPs or complete ongoing MLPs, but to instead use resource management plans (RMPs) to guide leasing decisions going forward. The updated policy also clarifies that "the BLM will not routinely defer leasing when waiting for an RMP amendment or revision to be signed."

Regarding lease parcel reviews, the updated policy reduced the parcel protest period from 30 days to 10 days and created a 60-day deadline for the resolution of protests. BLM also encouraged state offices to use regional teams to facilitate timely protest resolution and ensure consistency among offices.

In addition, the new policy removed public participation requirements during the NEPA process for potential leases. While the previous policy stated that state and field offices "will" provide for public participation, the new policy states that they "may" provide for public participation during the NEPA process. As a result, interested groups, individuals and potentially affected property owners will need to be more proactive and vigilant about BLM leasing and NEPA activities.

- **Bureau of Ocean Energy Management (BOEM).** Interior's offshore regulator, the BOEM, is also developing policies intended to streamline the permitting of offshore wind energy projects. On January 12, 2018, BOEM released new draft guidance intended to increase flexibility and efficiency in approving offshore wind project plans. Borrowing a concept from European offshore regulators, the draft guidance outlines a "Design Envelope" approach to Construction and Operations Plans for offshore wind projects.

Under the new guidance, developers would have the option to describe a "reasonable range of project designs," such as a range of foundation types, turbine sizes, different candidate ports, and different options for installing and siting required transmission. The Design Envelope could also be used where a lessee intends to develop its lease in phases, by describing the reasonable parameters for later development phases. BOEM's proposal is intended to allow maximum project design flexibility while minimizing the need for additional federal approvals. BOEM is soliciting comments on the proposal and intends to publish a final guidance document later this year.

US Forest Service. In January 2018, the Forest Service published an Advance Notice of Proposed Rulemaking announcing an effort to reform the agency's NEPA regulations "with the goal of increasing efficiency." The notice cited the increasing percentage of agency resources spent on fire suppression as one of the key factors behind the streamlining efforts. Some of the reforms the agency is contemplating include steps to "complete project decision making in a timelier manner, to improve or eliminate inefficient processes and steps, and where appropriate increase the scale of analysis and the amount of

activities authorized in a single analysis and decision.”

The Forest Service sought public comment, which closed on February 2, 2018, regarding superfluous or outdated processes and analysis requirements; landscape-scale approaches that would facilitate restoration of National Forest System lands; new classes of categorical exclusions; and ways to expand and enhance coordination of reviews with other federal agencies, as well as state, tribal or local environmental reviews. The Forest Service will now consider the comments and develop revisions to its NEPA procedures in consultation with CEQ.

Conclusion

We can expect that agencies will continue to work to implement the Administration's priorities within their existing authorities, even in the absence of an infrastructure legislative package. These reform efforts present significant opportunities to remove unnecessary inefficiencies; they also carry some risk of litigation. Given limited agency resources and ambitious reform agendas, it may be a long time before these directives and reform efforts are fully implemented and can benefit specific projects. In the meantime, however, sponsors of complex infrastructure projects should leverage the Administration's proposals and existing tools such as FAST-41 to help keep agencies on track and advocate for coordinated reviews to keep projects from languishing.

For more information on this alert or other infrastructure matters, contact:

H. David Gold +1 617 526 6425 david.gold@wilmerhale.com

Raya B. Treiser +1 202 663 6002 raya.treiser@wilmerhale.com

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To: aurelia_skipwith@ios.doi.gov[aurelia_skipwith@ios.doi.gov]
From: Bonnie Brown
Sent: 2018-03-01T15:55:56-05:00
Importance: Normal
Subject: invitation to speak at the Colorado Wool Growers Convention
Received: 2018-03-01T15:57:00-05:00

Good Afternoon Ms. Skipwith,
I heard you speak at the Wild Horse Summit in Salt Lake and at the Public Lands Council meeting last fall.
I hope you are available to come to our annual convention in July to talk to our members about Administration policy.

Our convention is July 11-12 in Montrose, Colorado, and if available, I would have you tentative scheduled for 10:30-11:15 on July 11th.
Our members are tremendously impacted by federal lands issues and of particular concern are wild horses, sage grouse, and the ESA.

Flights into Montrose and Grand Junction are limited, so it is best to book air travel early.
Please let me know at your earliest convenience is you will be able to join us.

Thank you for your time and consideration.

Respectfully,

Bonnie Brown, Executive Director
Colorado Wool Growers Association
Colorado Sheep & Wool Authority
Colorado Lamb Council
PO Box 292
Delta, CO 81416-0292
(970) 874-1433
(970) 874-4170 fax
(303) 638-0596 cell

To: aurelia_skipwith@ios.doi.gov[aurelia_skipwith@ios.doi.gov]
From: Bonnie Brown
Sent: 2018-03-05T11:07:31-05:00
Importance: Normal
Subject: Re: invitation to speak at the Colorado Wool Growers Convention
Received: 2018-03-05T11:07:39-05:00

Thanks for your prompt reply!

Bonnie Brown, Executive Director
Colorado Wool Growers Association
Colorado Sheep & Wool Authority
Colorado Lamb Council
PO Box 292
Delta, CO 81416-0292
(970) 874-1433
(970) 874-4170 fax
(303) 638-0596 cell

-----Original Message-----

From: Skipwith, Aurelia <aurelia_skipwith@ios.doi.gov>
To: Bonnie Brown (b)(6)
Sent: Mon, Mar 5, 2018 6:39 am
Subject: Re: invitation to speak at the Colorado Wool Growers Convention

Good morning Bonnie,

Thank you for your message. I'm having this reviewed through DOI's internal approval process and will let you know shortly.

I hope you are doing well!

Kind Regards,

Aurelia Skipwith
Deputy Assistant Secretary
for Fish and Wildlife and Parks

U.S. Department of Interior
1849 C Street, NW, Room 3148
Washington, DC 20240
(202) 208-5837

NOTE: Every email I send or receive is subject to release under the Freedom of Information Act.

On Thu, Mar 1, 2018 at 3:55 PM, Bonnie Brown (b)(6) wrote:

Good Afternoon Ms. Skipwith,
I heard you speak at the Wild Horse Summit in Salt Lake and at the Public Lands Council meeting last fall. I hope you are available to come to our annual convention in July to talk to our members about Administration policy.

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(970) 874-1433
(970) 874-4170 fax
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Cc: Keith Norris[knorris@wildlife.org]
From: Caroline Murphy
Sent: 2018-03-07T17:08:41-05:00
Importance: Normal
Subject: The Wildlife Society: Letter Regarding Administration's FY 2019 Budget Request
Received: 2018-03-07T17:10:13-05:00
[TWS FY19POTUSBudgetRequest Response 2018.03.07.FINAL.pdf](#)

Dear Director Mulvaney,
Please find attached a letter detailing The Wildlife Society's concerns regarding the Administration's FY 2019 proposed cuts to programs vital to the implementation of scientifically-sound natural resource policy and regulation.

Specifically, this letter addresses the five programs below and requests that any cuts to these programs be reconsidered for future budget cycles:

- USGS Cooperative Research Units Program
- State and Tribal Wildlife Grants Program
- National Wildlife Refuge System
- USDA Wildlife Services - Wildlife Damage Management Program
- Forest Service Research and Development Program

Please do not hesitate to reach out with any questions regarding these concerns. The Wildlife Society looks forward to hearing the thoughts of the Administration on these important programs.

Regards,

Caroline

--

Caroline Murphy, AWB®
Government Relations Program Coordinator
The Wildlife Society
425 Barlow Place, Suite 200
Bethesda, MD 20814
301-897-9770 x 308
wildlife.org



THE WILDLIFE SOCIETY

Leaders in Wildlife Science, Management and Conservation

7 March 2018

The Honorable Mick Mulvaney
Director, Office of Management and Budget
725 17th St NW
Washington, DC 20503

Re: Conservation Programs in the FY 2019 Budget

Dear Director Mulvaney,

The Wildlife Society is writing to express concern over the de-prioritization of science and scientifically sound wildlife conservation and management programs within the Trump Administration's FY 2019 budget request.

The Wildlife Society, founded in 1937, is a non-profit professional society representing over 10,000 wildlife biologists and managers dedicated to excellence in wildlife stewardship through science and education. Our mission is to inspire, empower, and enable wildlife professionals to sustain wildlife populations and habitat through science-based management and conservation.

Many conservation programs within the Departments of the Interior and Agriculture assist the federal, state, private, and non-profit biologists and managers we represent in maintaining wildlife populations as a public trust resource for the benefit of all Americans. Relative to the FY2019 budget request, of notable importance to our members are the United States Geological Survey (USGS) Cooperative Research Units (CRU) Program, the State and Tribal Wildlife Grants Program, the National Wildlife Refuge System, the USDA Wildlife Services - Wildlife Damage Management Program, and the Forest Service Research and Development Program.

Without funding for these programs, applied science and monitoring programs will be lost, and practical, proactive conservation and management measures carried out by federal entities in coordination with state, tribal, and local partners will be impossible to implement. This will leave federal agencies with an unfillable knowledge gap, and has the potential to cause costlier, reactive conservation measures, such as Endangered Species Act listings. Such listings can be a significant burden to private sector economic activity and lead to burdensome regulations at both state and federal levels.

USGS Cooperative Research Units Program

The CRU, within the USGS Ecosystems Mission Area, is a true partnership among federal, state, non-governmental organizations (NGOs), and academic institutions to provide applied science tailored to the needs of on the ground wildlife managers, and helps develop the next generation of wildlife biologists and managers. With 40 CRUs housed at universities in 38 states, these partnerships **leverage more than three dollars in external funds for every federal dollar invested.**

Each CRU is a collective endeavor and product of its cooperators, which usually include the university, the state fish and wildlife agency, a federal natural resource agency, and the Wildlife Management Institute. In many states, CRUs are the research arm of state fish and wildlife agencies, providing agencies with the science to support sustainable hunting, fishing, and trapping opportunities that largely drive conservation funding in the U.S. In consultation with cooperators, in 2016-2017 CRU scientists and

students conducted 149 research projects to enhance the management and conservation of some of America's most iconic game species including elk, white-tailed deer, mule deer, pronghorn, moose, and black bear while also addressing science needs for multitudes of other native species critical to ecosystem sustainability and human well-being.

Federal partners also greatly benefit from adequate funding of the CRUs. In 2016-2017, CRUs partnered with the Bureau of Land Management, Bureau of Reclamation, Department of Defense, NASA, National Park Service, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service (USFWS), and the USDA Forest Service to help meet these agencies' research needs.

For the National Park Service, CRU scientists and students developed a structured decision making process to help officials determine appropriate cruise ship priorities for Glacier Bay National Park that considered recreational opportunities and native wildlife needs. For the USFWS, CRU scientists and students pioneered incorporating population viability models into species status assessments, a model that was eventually applied in the Service's Endangered Species Act not-warranted decision for the Sonoran desert tortoise (*Gopherus morafkai*).

Resource agencies partner with the CRUs not only because they are highly responsive to their scientific needs and are composed highly reputable, skilled researchers, but also because they are highly cost-effective. **Elimination of CRUs, as the Trump Administration budget requests, would have devastating impacts to the scientific capacity and science-based wildlife management decisions of partner state and federal agencies.** This proposal would result in the termination of 40 cooperative agreements with 38 state governments, 40 universities, the USFWS, and the Wildlife Management Institute, and end nearly 800 ongoing research projects funded with approximately \$40.5 million in externally-sourced, reimbursable funds. Agencies charged with managing wildlife as a public trust resource do not have the funding, infrastructure, or scientific capacity to compensate for elimination of CRUs.

State and Tribal Wildlife Grants

The State and Tribal Wildlife Grants Program (STWG), within the USFWS budget, is the nation's only program that directly supports developing and implementing State Wildlife Action Plans (SWAPs), which are fundamental to preventing listing of more species under the Endangered Species Act. This program was created in 2000 to empower states and their partners to proactively and cost-effectively conserve fish and wildlife at the state level. This funding led to the congressionally mandated development of SWAPs in every state, territory, and the District of Columbia. These recently updated plans are the blueprints for conserving over 12,000 species deemed at-risk of decline or in need of additional monitoring efforts to determine their status, distribution, and trends in populations, critical information to avoid ESA listing. **The FY 2019 budget request proposes a 50% reduction in this program,** undoing years of work to conserve species before they become threatened or endangered.

Current funding levels, despite being well below the level required to implement the critical conservation actions identified in SWAPs, have assisted in Endangered Species Act delistings, downlistings, and not-warranted decisions for many previously at-risk species.

For example, in September 2015, the New England cottontail (*Sylvilagus transitionalis*) was determined by the USFWS to not warrant listing under the Endangered Species Act, in part due to state and regional work made possible by STWG. This work included coordinated habitat management, field surveys involving DNA sampling, technical assistance to private landowners, captive breeding, and reintroduction to suitable habitats. This cooperative science and management effort was only possible with support from the STWG program.

Another species, the Delmarva fox squirrel (*Sciurus niger cinereus*), was delisted from the Endangered Species Act as a result of the state-based collaborative efforts partly funded through this program. These efforts not only included habitat conservation and management, but also monitoring that provided the data necessary for delisting.

USFWS National Wildlife Refuge System

The Administration's FY 2019 budget request for the National Wildlife Refuge System (NWRS) outlines an **\$11 million reduction and realignment of the accounts currently funded.**

The NWRS first came into creation under the leadership of President Theodore Roosevelt, who established the country's first 51 refuges during his time in office. Today, the NWRS hosts 566 refuge units, 38 wetland management districts, and 5 marine national monuments spanning over 850 million acres of land and water in every U.S. state and territory.

While these units are essential in the conservation of native species for the enjoyment of all Americans, they also carry notable value for surrounding communities, generating approximately \$4.87 in economic activity for every \$1 appropriated by Congress.

The economic benefits of investing in the NWRS have unfortunately not been reflected in the system's appropriated funding levels in recent fiscal years. Each year, the NWRS budget must absorb fixed management cost increases between \$8 million and \$15 million in real dollars. This means that the FY 2019 Refuge System request is nearly \$100 million, or 17.4% less than, the system's FY 2010 funding levels. This has resulted in a federal program with an operations and maintenance backlog of over \$3.3 billion, where real and increased infrastructure investment is sorely needed.

Due to this shortfall, hundreds of positions will remain vacant while more are eliminated. This should not be seen as a cost-saving measure, but rather a missed opportunity to perform collaborative conservation work with other private, federal, state, local, and tribal officials in surrounding areas.

Refuge Comprehensive Conservation Plans, which are congressionally mandated planning tools created in cooperation with the state and local stakeholders of each refuge, will cease to be effective. Thousands of acres of invasive species will remain unchecked, hunting and other wildlife-associated recreation programs will be reduced, and refuge professionals will be unable to maintain visitor standards or implement conservation measures, many directed to help species already listed under the Endangered Species Act.

USDA APHIS Wildlife Services - Wildlife Damage Management Program

Wildlife Services' Wildlife Damage Management program would see a **45% reduction in funding, down to \$46 million, under the FY2019 budget proposal.**

The Wildlife Damage Management program within USDA Animal and Plant Health Inspection Services provides expertise and management assistance to cooperators throughout the states, aiming to maintain human and wildlife health and prevent human-wildlife conflict. In practice, this has been done through programs like the National Rabies Management program, which distributes oral rabies vaccines to wildlife within targeted areas with the goal of eradication; and the feral swine (*Sus scrofa*) management program, which works with cooperators to protect natural and manmade resources against highly destructive feral swine.

These projects are conducted via agreements with local, state, and tribal authorities, who provide some of the funding necessary to complete these programs in order to enlist Wildlife Services as the federal coordinating body that works to uniformly and cost-effectively address these issues at all levels of governance.

Rabies, feral swine, and the many other conflicts handled by Wildlife Damage Management do not abide by jurisdictional boundaries. The colonization of nuisance wildlife in one jurisdiction can quickly have disastrous implications for surrounding jurisdictions if the issue is not effectively managed by a coordinating body. In order to aggressively target these problems to protect both wildlife and human health, the Administration must maintain its supportive role in partnerships focused on invasive and nuisance species management.

USDA Forest Service Research and Development Program

Building on over 100 years of research, Forest Service Research and Development (FSRD) programs inform policy and land management decisions that improve the health and use of the nation's forests, grasslands, and adjoining aquatic systems and increase the competitiveness of U.S. products in the global marketplace. This program also provides critical information for managing many wildlife species on privately owned lands. Funding for these important activities is critical to sustaining the nation's natural resources. Unfortunately, **the Trump Administration's FY 2019 budget request calls for a \$47 million decrease to Forest and Rangeland Research within the FSRD line item.**

Continuing the trend of reductions in FSRD will result in significant gaps in the knowledge base and data sets necessary to address the many threats facing our nation's forest economy. The Forest Service is responsible for more research on forestry and forest-related resources than any other organization in the world. Through long-term monitoring and collaborative research efforts with states and other partners, FSRD generates an understanding of wildlife-habitat relationships for multiple species and communities that enables informed land management decisions that benefit wildlife and people. This includes informing conservation efforts that have helped to avoid Endangered Species Act listings for several forest and rangeland wildlife species, such as the greater sage-grouse (*Centrocercus urophasianus*).

In 2015, the U.S. Fish and Wildlife Service decided not to list the greater sage-grouse after an unprecedented conservation partnership, supported in part by FSRD, significantly reduced threats to the greater sage-grouse and its habitat. Through these actions, the partnership not only helped enhance health of the sage brush ecosystem that supports over 350 additional species and an estimated \$1 billion in outdoor recreation, but also effectively avoided the economic and regulatory uncertainty associated with an ESA listing across an estimated 173 million acres. This precedent has shaped the way FSRD works to proactively conserve species proposed for listing under the ESA.

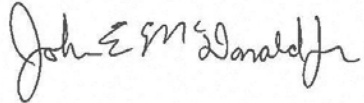
The Need for Conservation Funding

The North American Model of Wildlife Conservation, the primary basis of our country's success in wildlife management and conservation, stresses science as a proper tool for the discharge of wildlife policy. This has been understood by multiple Administrations, beginning with that of President Theodore Roosevelt who initially harnessed this idea.

Today, the generation and application of science is still understood to be the root of all effective natural resource policies and regulations. Without an investment in these programs, the policies by which we govern our natural resources will suffer due to a lack of current and unbiased information. This is not only bad policy, but as noted above it has the potential to be financially cost-intensive.

The Wildlife Society urges the Trump Administration to reconsider proposed decreases in funding in future budget cycles to the CRUs, the State and Tribal Wildlife Grants Program, the NWRs, the USDA Wildlife Services-Wildlife Damage Management Program, the FSRD program, and other programs that support science-based wildlife conservation and management.

Sincerely,

A handwritten signature in black ink, reading "John E. McDonald, Jr." in a cursive script.

Dr. John E. McDonald, Jr.
President

To: aurelia_skipwith@ios.doi.gov[aurelia_skipwith@ios.doi.gov]
Cc: Jay Jensen[Jay.Jensen@NFWF.ORG]; Clouse, Scott[SCLOUSE@southernco.com]
From: Drumm, Joseph C.
Sent: 2018-03-08T16:54:36-05:00
Importance: Normal
Subject: NFWF/Southern Company 15th Annual Stewardship Partners meeting
Received: 2018-03-08T16:54:52-05:00
[2018 Stewardship Partners Meeting Save-the-date.pdf](#)
[Agenda 2017.pdf](#)

Aurelia,

I hope this note finds you well. I know you and your office have been extremely busy. I wanted to reach out since we last touched base in December following meeting at the National Fish and Wildlife Foundation (NFWF) Board of Directors Reception.

As celebrated at the reception, Southern Company and the NFWF have been partnering for over a decade to fund conservation programs on private and public lands in the Southeast. We are excited for our 15th annual Stewardship Partners meeting that will take place May 15th-17th in Biloxi, Mississippi.

We invite you to speak on your office's initiatives and the importance of public-private conservation partnerships. We will hold a prominent speaking place for you on the agenda (May 16th) with flexibility dependent on your schedule.

The purpose of this event is to foster an open, effective dialogue on environmental issues relevant to the Southeast and beyond by creating a venue where community and capacity can be built in support of meaningful conservation outcomes. This annual meeting assembles both program implementers and funders to discuss the partnership's progress and accomplishments and highlight areas upon which to focus in the future.

The audience includes approximately 170 people representing over 60 agencies and organizations including policy and field personnel as well as executive leadership and experts from Southern Company and NFWF.

A Save-the-Date notice with more details on the event is attached. In addition, I have attached the agenda from last year's meeting to better familiarize yourself with the event.

Feel free to contact me with any questions -- we would be honored to have you.

Thank you for the support.

Joe Drumm

Natural Resources & Stewardship Supervisor

Southern Company Environmental Affairs

Bin 14N-8195 APC HDQS | 600 18th North Street PO Box 2641 | Birmingham, AL 35203

Office 205.257.4140 | Cell 205.500.8613 | jcdrumm@southernco.com





PARTNERING TO IMPROVE THE ENVIRONMENT

15th Annual Stewardship Partners Meeting

Celebrating and Building on 15-Years of Conservation Southern Style

Save this date: May 15-17, 2018, in Biloxi, Mississippi

Greetings!

Please plan to join us May 15-17, 2018, in Biloxi, Miss., for Southern Company and the National Fish and Wildlife Foundation's **15th Annual Stewardship Partners Meeting** for an open dialogue on natural resource conservation issues relevant to the Southeast and beyond. This event will highlight partnership progress and achievements and create a venue to build community and capacity in support of meaningful conservation outcomes into the future.

This is an excellent opportunity to enhance your conservation relationships with grantees, funders, thought leaders and other invited guests. A packed agenda will feature topical conservation issues and showcase grantee projects through expert panels, presentations and discussions. There will be plenty of time for networking throughout the meeting, receptions and field tours.

Agenda at-a-glance

- May 15th (evening) Welcome reception at the *Maritime and Seafood Industry Museum*
- May 16th (all day) – Main event, followed by poolside reception, *Golden Nugget Biloxi Hotel*
- May 17th (morning) – Networking field tours: *Ashe Seed Extractory at DeSoto National Forest; Mississippi Sandhill Crane National Wildlife Refuge; or Birding on the Beach*

Registration is free but required

Look for an email that will link to a web registration site containing complete meeting details by early April. ***Registration is required, space is limited and the hotel's discounted group rate has a firm cutoff, so please don't delay in both registering and making reservations.***

We look forward to seeing you, or your designated representative, in May to celebrate 15 years of conservation and discuss future partnership opportunities!

If you have questions, please contact:

Lindsay Vacek
NFWF
202-595-2433

Leslie Cox
Southern Company
205-257-5187

Patrick Chubb
Mississippi Power
228-897-6438



TUESDAY, APRIL 4

ALABAMA WILDLIFE FEDERATION'S IRELAND NATUREPLEX

5:00 8:30 p.m. **Welcome Reception**

Join us for opening remarks and heavy hors d'oeuvres at the **Alabama Wildlife Federation (AWF) NaturePlex**, which opened in October 2015. Designed to ensure that the beauty of the surroundings is uncompromised, this 23,000 square foot, heated and cooled facility serves as the official welcome and education center of AWF's nature center facility. Located on 350 acres known as Lanark, just 10 miles north of Montgomery, and only a couple of miles from I 65, the Center is a planned use, outdoor education facility offering hands on, outdoor based educational programs and activities. The property contains forests, fields, streams, wetlands and ponds, traversed by five miles of boardwalks and trails across three distinct regions: Still Creek Run, Turkey Ridge, and Hilltop Pass. NaturePlex also contains a Discovery Hall and theatre (Learn more about Lanark online at www.alabamawildlife.org/alabama_nature_center).

Feel free to explore the NaturePlex and the trails on your own before or after the Stewardship Partners Meeting during their normal 9 a.m. 5 p.m. business hours. Street Address: 3050 Lanark Rd, Millbrook, AL 36054. Check in at the NaturePlex and advise that you are with the Stewardship Partners Meeting to receive free admission.

CONFERENCE CENTER ENTRANCE, RENAISSANCE MONTGOMERY

4:00, 4:30 and 5:00 p.m. **Meet shuttle buses in front of the hotel**

Bus capacity is limited, so please adhere to the departure time selected at registration. The NaturePlex is in Milbrook, approximately 15 minutes by vehicle from the Renaissance Montgomery.

5:00 p.m. **Reception begins**

7:15 p.m. **Opening Remarks**

Emcee: Jason Reynolds, Director, Environmental Affairs, Southern Company
Tim Gothard, Executive Director, Alabama Wildlife Federation
Holly Bamford, Chief Conservation Officer, National Fish and Wildlife Foundation
Chuck Sykes, Director, Wildlife and Freshwater Fisheries Division, Alabama Dept. of Conservation and Natural Resources
Susan Comensky, Vice President, Environmental Affairs, Alabama Power

8:15 8:30 p.m. **Return shuttle bus service to Renaissance Montgomery**



WEDNESDAY, APRIL 5

MONTGOMERY RENAISSANCE

FOYER ALABAMA A&B

7:00 a.m. **Continental Breakfast**

ALABAMA A&B

8:15 a.m. **Greetings, Event Overview and Introductions**

#SUSAN

Susan Comensky, Vice President, Environmental Affairs, Alabama Power

#JAY

Jay Jensen, Director, National Fish and Wildlife Foundation, Southern Region

8:40 a.m.

A Quick Overview of 14,000 Years of Alabama Environmental History

The first people arrived in Alabama at the end of the last period of Ice Age glacial expansion. This presentation will review human relationships to the land during the time that followed in terms of broad epochs of change and explore how practices of the past helped shape the world in which we live today.

#EDWIN

Edwin Bridges, Author and Director Emeritus, Alabama Department of Archives and History

9:15 a.m.

Regional Perspective

Hear the latest thinking on current trends and issues around wildlife conservation in the Southeast from a key federal agency leader.

#MIKE

Mike Oetker, Deputy Regional Director, U.S. Fish and Wildlife Service, Southeast Region

SESSION 1

9:30 a.m.

Beyond the Grass Stage: Next Steps for the Longleaf Stewardship Fund and America's Longleaf Restoration Initiative

In 2012, the National Fish and Wildlife Foundation and Southern Company joined forces with four federal agencies to form the **Longleaf Stewardship Fund**, ramp up funding, and accelerate efforts to restore eight million acres of longleaf pine by 2025. Last year marked five years of grant making for the fund, and to date the partners have awarded **94 grants** totaling more than **\$18.6 million** to projects that will impact nearly **850,000 acres** of longleaf habitat. Last year marked the mid point of the 15 year timeframe established by America's Longleaf Restoration Initiative (ALRI) to reach eight million acres of restored longleaf. Recent data shows that longleaf acreage is increasing across the South, but is the partnership on pace to reach this goal by 2025? This session will provide an update on progress towards the goal, highlight recently identified



"game changers" to speed up the pace of restoration, and reflect on the current role and future opportunities for the fund to advance and accelerate longleaf restoration.

#JIM Jim Guldin, Supervisory Research Ecologist and Project Leader, U.S. Forest Service,
Southern Research Station

#LITS **Case Studies Panel Discussion: The Role and Evolution of Local Implementation Teams**
Moderator: Jim Guldin

This panel discussion will highlight two local implementation teams working to restore longleaf pine within high priority geographies, these include the role of the coordinator to advance and grow the partnerships, additions of key and non traditional partners that have contributed to new ideas and conservation opportunities and the role of the Southern Company/NFWF partnership in supporting these efforts.

Case Study 1:

Accelerating Longleaf Pine Ecosystem Restoration on Private Lands on the Fall Line

LuAnn Craighton, Outreach Director and Coordinator, The Nature Conservancy Georgia Chapter
Brent Widener, Lead Natural Resources Specialist and Acting Chief, Fort Benning
Dr. Dwight McLaurin, Owner, McLaurin Farms

Case Study 2:

Lessons from Public and Private Land Restoration on the Florida Panhandle

Brian Pelc, Restoration Project Manager, The Nature Conservancy, North Florida Program
Bonnie Stine, Cooperative Forestry Assistance Supervisor, Florida Forest Service
John Dunlap, District Wildlife Biologist, Apalachicola National Forest, U.S. Forest Service

10:45 a.m. **Break**

SESSION 2

11:15 a.m. **Data, Dollars and Dynamic Partnerships: Building a More Effective Private Lands Program**
Building relationships and trust with private landowners takes time, resources and the right partners, especially in the South where working forests and habitat for at risk species often overlap. Additionally, understanding what motivates forest landowners to implement conservation practices on their lands is critical to crafting the right message, providing the most appropriate technical assistance, and connecting them with financial assistance programs that can tip the scale towards restoration action. This session will highlight efforts to better utilize data to reach and appeal to forest landowners, build partnerships and capacity to sustain long term relationships with landowners, and strategically maximize available resources and programs to keep family forests working while also conserving at risk species.

Agenda

14th Annual Stewardship Partners Meeting
April 4-6, 2017
Montgomery, Alabama



#LANDOWNERS

Moderator: Chris Erwin, Director, Woodland Conservation, American Forest Foundation

Panelists:

Claude Jenkins, Wildlife Biologist, Alabama Wildlife Federation

Steve Musser, Assistant State Conservationist, Alabama Natural Resources Conservation Service

Mike Harris, Coordinator, At Risk Species, U.S. Fish and Wildlife Service, Southeast Region

Chris Isaacson, Executive Vice President, Alabama Forestry Association

ALABAMA CDE

12:30 p.m.

Networking Lunch

1:30 p.m.

Break

ALABAMA A&B

SESSION 3

2:00 p.m.

Power of Flight: Conservation Accomplishments for Selected Species and the Road Ahead

In 2003, Southern Company and NFWF launched their long standing partnership with the Power of Flight, seeking to support projects and initiatives that would benefit and bolster the populations of imperiled bird species native to the South. Over the past thirteen years, Power of Flight partnership has invested over \$3.7 million in bird conservation through 87 grants, translating into nearly \$23 million in on the ground restoration and increased public awareness of Southern bird populations and habitats. Grantees will highlight progress made in addressing key bird conservation issues and discuss the future direction of their work.

#IAN

Moderator: Ian Davidson, Director, Bird and Wildlife Conservation, National Fish and Wildlife Foundation

Mapping Migratory Bird Habitat along the Gulf

The Gulf of Mexico provides critical stopover habitat for many of North America's migratory birds. Unfortunately, rapid habitat loss and degradation exacerbated by recent large scale events accentuate the need to develop Gulf wide conservation priorities for migratory birds and their habitats. In this session, the Smithsonian Migratory Bird Center head will discuss their efforts using weather radar and citizen collected data to map birds' distribution, abundance, timing, and habitat affiliations during their spring and fall migrations around the Gulf. This assessment will help identify and characterize priority sites and habitats for conservation. Ultimately, the work will result in decision support maps to aid conservation planners and policymakers as they work to develop Gulf wide conservation priorities for migratory birds.

#PETE

Pete Marra, Director, Smithsonian Migratory Bird Center



#RCW

Red-cockaded Woodpeckers

Since 2003, the Power of Flight partnership has supported strategic red cockaded woodpecker (RCW) habitat restoration and translocation, significantly accelerating the pace of recovery for this iconic endangered species. This session will provide an update on recovery status, how Southern Company and NFWF's partnership is contributing to overall recovery efforts, and emerging innovations and trends for recovery work. This session also will highlight a project supported through Power of Flight to restore a self sustaining population of RCWs on the Enon and Sehay plantations 20,000 acres of privately owned forestland that is being restored and managed for longleaf pine habitat.

Ralph Costa, Wildlife Biologist, RCWO LLC and Milliken Forestry Co., Inc.

Eric Spadgenske, Alabama State Coordinator, Partners for Fish and Wildlife Program

#CRANES

Whooping Cranes

At 5 feet tall and with a wingspan over 7 feet, the endangered whooping crane is North America's tallest bird. Sadly, habitat loss and hunting in the late 1800s reduced this iconic crane's population to just 15 birds by 1940. Since then, a broad coalition of NGOs, private interests, and government agencies has worked to nurture the remaining wild and captive flocks to its current population of about 600 birds. The session will highlight Operation Migration's continuing reintroduction and outreach efforts to conserve whooping cranes and build a self sustaining Eastern population. "Journey of the Whooping Crane" is a documentary produced for Georgia Public Broadcasting that introduces viewers to some of the individuals who assisted this recovery. These include Joe Duff of Operation Migration, whose pioneering ultralight led whooping crane migration was supported by Power of Flight for eight years.

Joe Duff, Co founder and CEO, Operation Migration

Rhett Turner, Producer, Director and Founder, Red Sky Productions

SESSION 4

3:30 p.m.

Seeing is Believing: Storytelling Through Photography

A picture is worth a thousand words, so the saying goes. In today's world of sound bites and social media, competition for attention is fierce and connecting stakeholders, donors and the general public with conservation efforts is critical to building and sustaining support. Many conservation projects have a great story to tell and good imagery is one way to make the case. This session will cover the "do's and don'ts" of effective photography and provide tips for framing better photos to convey what's important and exciting about a conservation project. Bring your camera and your creative eye as there will be a competition for the best photo taken during the field tour on Thursday!

#MATT

Matt Winter, Senior Staff Writer, National Fish and Wildlife Foundation

Agenda

14th Annual Stewardship Partners Meeting
April 4-6, 2017
Montgomery, Alabama



4:00 p.m.

Closing Thoughts and Announcements

Jay Jensen, Director, National Fish and Wildlife Foundation, Southern Regional Office
Leslie Cox, Manager, Environmental Stewardship Program, Southern Company

4:15 p.m.

Adjourn

FOYER ALABAMA A&B

4:15 4:45 p.m.

Poster Session

Stop by during breaks or at this afternoon period to learn about various conservation efforts.

THE WAREHOUSE AT ALLEY STATION

5:00 8:00 p.m.

Networking Reception

Continue one on one discussions over heavy hors d'oeuvres at the Warehouse at Alley Station as we close out the 14th Annual Stewardship Partners Meeting.

**Alley Station is a 2 minute walk from the hotel; no shuttle service provided.*

7:15 p.m.

Closing Remarks

Susan Comensky, Vice President, Environmental Affairs, Alabama Power

Agenda

14th Annual Stewardship Partners Meeting
April 4-6, 2017
Montgomery, Alabama



THURSDAY, APRIL 6

FOYER ALABAMA A&B

7:30 a.m. 12:00 p.m. **Networking Tours** (*two options*)

Attire: Casual, wear comfortable walking shoes

Difficulty: Light walking

Materials: Recommend sunscreen, hat, bug spray, binoculars and camera (for photo contest)

Water will be provided

FOYER ALABAMA A&B

7:00 8:00 a.m. **"Grab n' Go" Breakfast** (*available for tour participants*)

HOTEL FRONT ENTRANCE

7:30 a.m. 12:00 p.m. **Networking Tour 1: Alabama Rivers Birding** *Limit 25 participants

Shuttle departs Renaissance at 7:30 a.m. and returns by noon

Tour Guides:

Suzanne Langley, Executive Director, Birmingham Audubon Society

Chris Oberholster, Policy Director, Birmingham Audubon Society

Steve Krotzer, Environmental Affairs Team Leader, Alabama Power

Additional resident expert birders

8:00 a.m. 12:00 p.m. **Networking Tour 2: Bogue Chitto Creek Farms**

Shuttle departs Renaissance at 8:00 a.m. and returns by Noon

Tour Guides:

Claude Jenkins, Wildlife Biologist, Alabama Wildlife Federation



TOUR DESCRIPTIONS

Alabama Rivers Birding

Welcome to the beginning of spring migration in central Alabama. While the exact tour will depend on weather and birding forecasts, guides plan to include stops at Fort Toulouse National Historic Park near Wetumpka and on to Lake Jordan Dam area or Yates Lake Forever Wild lands. Birds you are likely to see include Northern parula; Acadian flycatcher; early sightings of prothonotary, palm and other warblers; up to six species of woodpecker; osprey; bald eagle; red shouldered and red tailed hawk; brown headed nuthatch; little blue and other herons. We'll also be on the lookout for early spring arrivals.

Discussion, depending on route, may include:

- Birmingham Audubon's eagle turtle predation study
- Louisiana Audubon's efforts through the Prothonotary Warbler Working Group
- Environmental flows and habitat improvements in the Coosa River downstream of Alabama Power Company's Jordan Dam project

Bogue Chitto Creek Farms

Located in the Black Belt Prairie physiographic region of Dallas County, Bogue Chitto Creek Farms is a 2,800 acre property owned by Luis "Wicho" de Hechavarria. The tract consists of upland and bottomland hardwoods, loblolly pine plantations, prairies, old field habitat, and moist soil wetlands. Recently, nearly 500 acres of row crop fields were taken out of production; a portion of these fields will be converted to loblolly pine while other areas will be established in grassland habitat for wildlife. Land use goals for this property include generating revenue from the timber resource, managing habitat for game species, and enjoying wildlife recreation all within the context of responsible stewardship. Bogue Chitto Farms is a case study of how Hechavarria, through premeditated and deliberate planning and management, has successfully integrated habitat conservation with timber production.

Discussion topics will include:

- Conservation buffer practices
- Increasing usable space for wildlife in a rowcrop production system
- Establishing herbaceous field borders for wildlife
- Switchgrass filter strip establishment for water quality

To: aurelia_skipwith@ios.doi.gov[aurelia_skipwith@ios.doi.gov]
From: Bonnie Brown
Sent: 2018-03-12T14:27:13-04:00
Importance: Normal
Subject: Re: invitation to speak at the Colorado Wool Growers Convention
Received: 2018-03-12T14:29:31-04:00
[TentativeSchedule2018v1.doc](#)
[2017CWGA sponsorList.docx](#)
[2017PreregistrationForm.pdf](#)

Thank you, Ms. Skipwith, for your follow up.

- 1) We have asked you to speak at the 91st annual Colorado Wool Growers Association convention. We are the main host for the event, but we do have additional sponsors to help cover convention costs. the 2017 list of convention sponsors is attached. We typically have the same business sponsors annually, so I anticipate that 2018 will be very similar to the attached list.
- 2) The CWGA is a 501(c) 5
- 3) The purpose of our convention is to provide the Colorado lamb and wool industry with current information on issues that impact our farming, ranching, and feeding operations, and associated businesses.
- 4) No, the convention is an education forum, but there is a fundraising auction after the awards banquet for anyone that wishes to participate.
- 5) Please see attached agenda. We have federal and state employees presenting throughout our program.
- 6) anticipated attendance 100-120
- 7) Attached is the registration form from last year, and I don't anticipate price increases for this year. We operate our convention on a breakeven basis, so overall convention expenses, and anticipated sponsorship factor into our registration costs. We try to keep our registration fee low, to encourage participation, but also need to make sure we can cover the cost of the event. On a limited case-by-case basis, we do provide complimentary registration.
- 8) The tentative agenda is attached

Colorado is one of the top lamb and wool producing states in the nation, and our range producers rely heavily upon USFS and BLM grazing allotments, and our membership is directly impacted by the ESA, EPA, and other federal regulations.

(BLM wild horse mgmt. and sage grouse are of particular concern to us). We hope that you are able to join us to provide an agency update.

Bonnie Brown, Executive Director
Colorado Wool Growers Association
Colorado Sheep & Wool Authority
Colorado Lamb Council
PO Box 292
Delta, CO 81416-0292
(970) 874-1433
(970) 874-4170 fax
(303) 638-0596 cell

-----Original Message-----

From: Skipwith, Aurelia <aurelia_skipwith@ios.doi.gov>
To: Bonnie Brown (b)(6)
Sent: Fri, Mar 9, 2018 9:14 am
Subject: Re: invitation to speak at the Colorado Wool Growers Convention

Good morning Bonnie,

There are a few questions that need to be addressed. Could you please answer the following? Thank you.

1. Who is the sponsor or host?
2. Is the sponsor a 501(c)3?
3. What is the purpose of the event?
4. Is the event a fundraiser?
5. Who has been invited? (as in nonprofit, other federal executive employees, legislative branch, etc.)
6. Approximately, how many people are expected to attend?
7. What is the monetary value of the gift of free attendance? (cost conference fee, registration fee, food, refreshments, entertainment, instruction, and materials furnished to all attendees as an integral part of the event) How was this cost determined?
8. Please provide an agenda.

Aurelia Skipwith

Deputy Assistant Secretary
for Fish and Wildlife and Parks

U.S. Department of Interior
1849 C Street, NW, Room 3148
Washington, DC 20240
(202) 208-5837

NOTE: Every email I send or receive is subject to release under the Freedom of Information Act.

On Mon, Mar 5, 2018 at 11:07 AM, Bonnie Brown <(b)(5)> wrote:

Thanks for your prompt reply!

Bonnie Brown, Executive Director
Colorado Wool Growers Association
Colorado Sheep & Wool Authority
Colorado Lamb Council
PO Box 292
Delta, CO 81416-0292
(970) 874-1433
(970) 874-4170 fax
(303) 638-0596 cell

-----Original Message-----

From: Skipwith, Aurelia <aurelia_skipwith@ios.doi.gov>

To: Bonnie Brown <(b)(5)>

Sent: Mon, Mar 5, 2018 6:39 am

Subject: Re: invitation to speak at the Colorado Wool Growers Convention

Good morning Bonnie,

Thank you for your message. I'm having this reviewed through DOI's internal approval process and will let you know shortly.

I hope you are doing well!

Kind Regards,

Aurelia Skipwith

Deputy Assistant Secretary
for Fish and Wildlife and Parks

U.S. Department of Interior
1849 C Street, NW, Room 3148
Washington, DC 20240
(202) 208-5837

NOTE: Every email I send or receive is subject to release under the Freedom of Information Act.

On Thu, Mar 1, 2018 at 3:55 PM, Bonnie Brown (b)(5) wrote:

Good Afternoon Ms. Skipwith,
I heard you speak at the Wild Horse Summit in Salt Lake and at the Public Lands Council meeting last fall.
I hope you are available to come to our annual convention in July to talk to our members about
Administration policy.

Our convention is July 11-12 in Montrose, Colorado, and if available, I would have you tentative scheduled for
10:30-11:15 on July 11th.

Our members are tremendously impacted by federal lands issues and of particular concern are wild horses,
sage grouse, and the ESA.

Flights into Montrose and Grand Junction are limited, so it is best to book air travel early.
Please let me know at your earliest convenience is you will be able to join us.

Thank you for your time and consideration.

Respectfully,

Bonnie Brown, Executive Director
Colorado Wool Growers Association
Colorado Sheep & Wool Authority
Colorado Lamb Council
PO Box 292
Delta, CO 81416-0292
(970) 874-1433
(970) 874-4170 fax
(303) 638-0596 cell

AGFINITY, INC.	<i>Thursday Lunch</i>
American AgCredit	<i>Convention Booklets</i>
ANODYNE WOOL	<i>Wednesday Lunch</i>
ASI WOOL OUTREACH	<i>Wool Panel & Yield Contest</i>
Bank of the San Juans	<i>Convention Booklets</i>
Bollman Industries	<i>Convention Booklets</i>
CACTUS HILL RANCH COMPANY	<i>Wednesday Reception</i>
<i>Centennial Livestock Auction</i>	<i>Awards</i>
COLORADO LAMB COUNCIL	<i>ACF CCA Chefs</i>
COLORADO SERUM COMPANY	<i>Wednesday Awards Banquet</i>
CSU Veterinary Diagnostics Labs	<i>Speakers</i>
<i>Delta Animal Health</i>	<i>Awards</i>
<i>Desert Weyr, LLC</i>	<i>Awards</i>
DOUBLE J LAMB FEEDERS, INC.	<i>Wednesday Lunch</i>
Drake Livestock	<i>Speakers</i>
Godby Sheep Company	<i>Thursday Coffee & Pastries</i>
Great Plains Wool Company	<i>Wednesday Coffee & Pastries</i>
Great Western Bank	<i>Wednesday Coffee & Pastries</i>
<i>GuideWater</i>	<i>Awards</i>
Hall & Hall	<i>Thursday Coffee & Pastries</i>
HARPER FEEDERS, LLC	<i>Wednesday Awards Banquet</i>
HOLSINGER LAW, LLC	<i>Wednesday Reception</i>
<i>Lamb Soap Company</i>	<i>Awards</i>
Mountain West Insurance	<i>Wednesday Coffee & Pastries</i>
NLPA Sheep & Goat Fund	<i>Convention Booklets</i>
<i>Purina Animal Nutrition, LLC</i>	<i>Speakers</i>
<i>Redmond Minerals</i>	<i>Speakers</i>
Rifle Truck & Trailer	<i>Thursday Coffee & Pastries</i>
ROCKY MT. FINANCIAL GROUP	<i>Tuesday Evening Reception</i>
Roswell Wool	<i>Wednesday Lunch</i>
<i>Silveus Insurance Group</i>	<i>Speakers</i>
SUPERIOR FARMS	<i>Wednesday Reception</i>
<i>USDA National Ag Stats-Mt. Region</i>	<i>Convention Booklets</i>
WESTERN RANGE CAMPS	<i>Thursday Lunch</i>
Yocom-McColl Testing Labs	<i>Thursday Lunch</i>
ZOETIS	<i>Wednesday Awards Banquet</i>

Colorado Wool Growers Association

2018 Convention Schedule

Schedule for Tuesday, July 10th

6:00 9:00 p.m. *Welcome Reception – Sponsored by Rocky Mountain Financial Group
Hosted by Michael Monell & Chris Cheff – 1649 Story Lane*

Schedule for Wednesday, July 11th

7:00 8:00 a.m. *Coffee & Pastries*
8:00 8:15 a.m. *Welcome – President Ernie Etchart*

8:15 9:15 a.m. *Lamb Marketing Panel – (moderator)*
 ~
 ~
 ~

9:15 10:15 a.m. *Wool Marketing Panel – Julie Hansmire (moderator)*
 ~
 ~

10:15 10:30 a.m. *Break*

10:30 11:15 a.m. *Aurelia Skipwith*
 ~ DOI - Deputy Assistant Secretary, Fish, Wildlife, and Parks *(invited)*

11:15 12:15 *Western Range Degradation (wild horse) / cheat grass invasion (invited)*
 ~ Barry Parryman, PhD Ag, Nutrition, & Vet Sciences, University of Nevada
 ~
 ~

12:15 1:30 p.m. *Colorado Lamb Lunch*

1:30 3:30 p.m. *Federal Lands/Wildlife Panel*
 ~ BLM 1:30 2:15
 ~ Forest Service 2:15-3:00 -
 ~ CPW 3:00 3:45

3:45 4:00 p.m. *Break*
 Federal Lands/Wildlife Panel
 ~ Wildlife Services 400-4:45

4:45 6:00 p.m. *Government Affairs Panel – Landon Gates (moderator)*
 ~ Don Brown, Commissioner of Agriculture *(invited)*
 ~ Senate & House Ag Committee Members *(invited)*
 ~

(continued on back side)

6:00 7:00 p.m. *Reception*
7:00 10:30 p.m. *Awards Banquet*

Schedule for Thursday, July 12th

7:00 8:00 a.m. *Coffee & Pastries*

8:00 8:45 a.m. *Livestock Protection Dog Research Update (invited)*
 ☞ Julie Young,

8:45 9:30 a.m. *Sheep Grazing Project ?? - TBD*
 ☞ Nick Etcheverry

9:30 10:00 a.m. *American Sheep Industry Association Update*
 ☞

10:00 10:15 a.m. *Break*

10:15 11:00 *The Top5 Things We Overlook that Cost Us Money (confirmed)*
 ☞ Whit Stewart University of Wyoming

11:00 11:45 *Wolf Update (confirmed)*
 ☞ David Moreno, WS

11:45 12:00 *Colorado Make It With Wool Review*

12:00 1:30 p.m. *Colorado Lamb Lunch*

CWGA REGISTRATION FORM
90th Annual Convention ♦ July 12-13, 2017
Montrose Pavilion ♦ Montrose, Colorado

Please print names as you wish them to appear on your name badges.

Name

Name

Business/Organization

Names and ages of Children Registering

Address

Phone

Email

City

State

Zip

PRE-REGISTRATION: INCLUDES ALL MEALS AND MEETINGS

CWGA Member or Family Member.....	\$125 x	= \$
Full Registration (non-member).....	\$150 x	= \$
Child (13 and Under).....	\$40 x	= \$
Wednesday Only (member)	\$85 x	= \$
Wednesday Only (non-member)	\$100 x	= \$
Thursday Only (member).....	\$60 x	= \$
Thursday Only (non-member).....	\$75 x	= \$

All-day registration is required to attend all meetings and social functions
Individual meal tickets are for meals only and do not entitle individuals to attend meetings

INDIVIDUAL MEAL TICKETS: (children 4 & under free)

Wednesday Lunch.....	\$16 x	= \$
(Children 13 & under).....	\$10 x	= \$
Wednesday Reception & Dinner.....	\$35 x	= \$
(Children 13 & under).....	\$15 x	= \$
Thursday Lunch.....	\$16 x	= \$
(Children 13 & under).....	\$10 x	= \$

Late Registration Fee \$ _____
TOTAL \$ _____

Make checks payable to the CWGA
PO Box 292 ♦ Delta, CO 81416-0292

Questions?? cwgawool@aol.com or (970) 874-1433 (970) 874-4170 fax



Registration & Cancellation Policy

Late registration fee of \$20/person will apply to all registrations
postmarked after June 30th and to walk-in registrants.
Cancellations prior to 7/6 will receive a 75% refund. No refunds on or after 7/6.